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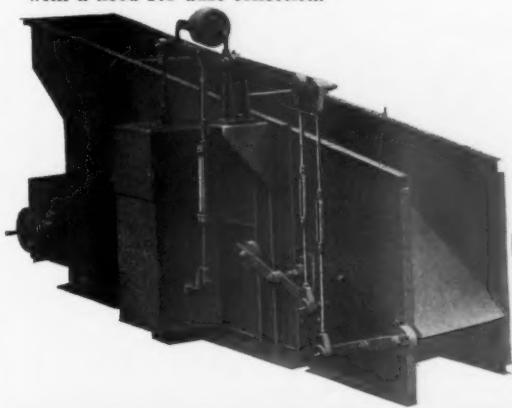
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E. R. COOMBS
Editor

NEWELL G. ALFORD
Associate Editor

FRANK B. COOK
Art Director

PARKER COTT
Field Representative

FRANK W. MORAN
Field Representative

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ATLAS EXPLOSIVES

In Defense of Home Markets

THE ONLY JUSTIFICATION for a protective tariff lies in its maintenance of higher living standards than prevail in competing countries. Living standards cannot rise above the purchasing power of the wages paid. If the currency of a competing country is depreciated 25 percent then a \$4 wage has a purchasing power of only \$3 and so far as competition is concerned is the same as a \$3 wage. If such country, before its currency depreciation, was on a fair competitive basis it has now a 25 percent advantage which is sufficient to enable it to control our market. A controlled market is one in which competition has been stifled and in which price levels are dependent upon the conscience of the seller if he possesses such a thing, which he usually does not.

As a result of depreciated foreign currencies our home production is now faced with almost complete ruin. Unless a tax is levied upon such importation as will offset this advantage to foreign production then the only other way to save our industries is by a wholesale reduction of costs largely made up of wages. **SHALL WE REDUCE OUR WAGES FROM 25 TO 60 PERCENT OR SHALL WE ASSESS THAT DIFFERENTIAL IN THE WAY OF A SPECIAL EXCISE TAX AGAINST THOSE IMPORTS?**

France with her greatly depreciated currency quickly found it advisable to apply compensating surtaxes for exchange variations when her neighbors went off the gold standard.

Canada, likewise, almost immediately provided a compensating dumping duty.

Most other nations promptly provided some offset to save their markets from ruination. Only the United States remained upon an unquestioned gold standard and has failed to act. The greatest and best markets in the world have been opened by foreign depreciated currencies to the most drastic competition and in many lines of production to complete domination.

If the tariff duty which we have exacted upon imports should happen to be a 25 percent duty, those goods find their way into our market upon exactly the same level

as they would were there no tariff and the wages were paid in undepreciated currency. In effect the protection afforded to the American workman by the Smoot-Hawley tariff has been on an average more than wiped out by foreign depreciated currencies. More than half of the imports into this country have been coming in entirely free of duty. Upon these non-protected articles, which Congress placed upon the free list because it believed that our producers could compete without a protective tariff, these depreciated currencies have created a differential to the extent of such depreciation which is in effect a premium upon imports as against our own manufacturers. The American public has not realized the terrific importance of these frequently designed foreign schemes to invade what is even now the best market in the world. The increasing importations even during the stress of present times are entirely destroying the possibility of a revival of our manufacturing interests and are building an impregnable gate against the American workman whose earning capacity must be reinstated before prosperity can come to the industries of the United States.

More than a year has elapsed since Great Britain abandoned the gold standard—more than a year our markets have been preyed upon by the world; more than a year this problem has been before the country; more than a year has Congress overlooked its vast importance and even now Congress is proposing to evade the issue and postpone action.

This situation has been recognized by Congress, bills are under consideration to remedy the situation, but an unfortunate disposition exists to leave all legislative matters to the incoming administration which is likely to so delay proper action as to delay prosperity's return for from one to three years.

IF THE PREMISES ABOVE OUTLINED ARE CORRECT IT IS THE DUTY OF CONGRESS TO TAKE IMMEDIATE ACTION.

When the building is burning the fire department must act immediately. Congress is charged with this responsibility.



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The MINING CONGRESS JOURNAL

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A Journal for the entire mining industry published by The American Mining Congress

A QUESTION OF THE TARIFF



CONSIDERABLE SPECULATION has taken place since the November elections as to just what the attitude of the new administration will be toward the time-honored protective tariff policy of the Republicans. Quite frankly there has been uneasiness among the industries that must depend upon protection for their very existence. There is every reason now, not to mention after March 4, to worry about the tariff. The effect of depreciated foreign currencies upon this important subject in effect either greatly reduces the tariff or entirely wipes it out. The fact is that we are now faced with the most drastic competition from the lowest-paid labor in the world, made even lower by the extent of currency depreciation in the several countries. And unless something is done about it, our markets will be so flooded with foreign materials as to seriously and still further retard our economic recovery. The Hill bill, now before the Ways and Means Committee of the House, and upon which hearings are scheduled, offers assistance.

THE BLACK BILL



THE MINING INDUSTRY was catapulted into the midst of the discussion on the bill sponsored by Senator Black, calling for compulsory universal adoption of the 30-hour week, when Philip Murray, United Mine Workers of America, advocated an amendment to the bill which would make it illegal to ship any product in interstate commerce which did not employ union labor. This, added to the provision that nothing may be shipped in interstate commerce that is produced by any concern not operating on the 6-hour day, 5-day week, gives a nice little air-tight proposition—for labor. But what about the fellow who must pay the wages and finance the manufacture of the product? Shall we have a companion bill to limit the price of articles so produced? And whose orchestra shall we select to play for the obsequies of American business?

THE EXTRA SESSION



NOW THAT President-elect Roosevelt has assured the country that there will be an extra session of Congress about the 1st of April, much anxiety is relieved. It is obvious that the present session will do little other than pass the necessary appropriation bills. The Democratic Party in its election program pledged drastic change from the present administration. The sooner we get under way, the sooner business will know just what it may expect. Will the tariff be revised downward? Will there be a completely new tax measure to "balance the budget"? What will the policy be in regard to the Finance Corporation? A great deal depends upon the early settlement of these questions.

The mental state of business is nothing short of appalling; no sun's rays are visible. Possibly when the uncertainty of a new administration is cleared, we may expect a revival of our vaunted optimism.

THE TECHNOCRACY BUG



ISN'T IT AMUSING that anything so ancient as technocracy should be so dressed up as to appear a new idea? As a matter of fact, some remote ancestor started this movement with the invention of the wheel, and it has steadily progressed as the application of mechanical power has been extended to replace the hand loom, the horse and wagon, the pick and shovel, the candle and oil lamp, and even the pen. Because each of these inventions has decreased the drudgery of labor and added to the comforts of living, we have grown to accept technocracy as a blessing. But not under that name.

Just what the group of men who have organized themselves as technocrats are trying to do is somewhat of a mystery, and the thought persists that they are merely trying to make some sort of capital for themselves. If they have a real solution for working out a balance between production, consumption, and purchasing power, we shall be glad to know more about it. As a nation we are going forward, not backward, and the application of mechanical power instead of muscular labor is needed to produce more necessities, comforts, and luxuries for our people. But at that we may not be "technocrats."

LOW PRICES



THE READING WORLD has been bombarded with facts, statistics, statements, and what have you, to prove that low prices are with us and that we are better off thereby. Equally, we are told that it is good for our souls to have wages reduced, to have the price of our product reduced to the lowest ebb. But has all of the propaganda presented really proved the point? Those who stoutly maintain that the law of supply and demand is the ultimate solution have been compelled to sit by and watch millions of men go jobless. Others who maintain that a man-made law is necessary to terminate the unhappy situation have been able to do little other than advocate. Laws now on the statute books make it unlawful to combine in an effort to keep price up. There is no law that prevents anyone from refusing to sell his product below cost. But there would be one soon if the necessities of life were not available.

The mining industry, producing such basic commodities as coal and copper, can not maintain itself on low prices. Who is going to remedy the situation? The producer? The politician? The labor union, with its threat of economic force? All three can remedy the situation. Legislation of some kind is inevitable. The producer and the laborer should see to it that whatever is presented represents a fair cross-section of the industries affected.

A RECENTLY syndicated editorial took very grave issue with Mr. Robert E. Tally for his message to the annual members' meeting of the American Mining Congress, in which he urged revision of the trust laws as an effective means of securing a stabilized industry. It says: "The Federal Government at the present time is not interfering with any reasonable trade agreement." If our critic will organize what he terms a "reasonable trade agreement" with his fellow publishers, he will learn shortly a new definition of the term. Again and again producers have attempted to secure some kind of a ruling that will permit them to curtail production, and as frequently they run up against the interpretation of the trust laws. Coal, copper, lead, zinc, lumber, oil—in fact all industry suffering from drastic competition—need assistance. Surely if the editor's notion is correct, he should play hero and come to the aid of these harrassed industries. Is a monopoly, which he so decries, worse than an industry closed down, employing no labor and earning no dividends?

THE PRESENT STATE OF MINERALS

AS WITH ALL HUMANS, every branch of the mining industry is inclined at this time to take the short view of the situation. It is a serious matter indeed when the production figures reach all-time lows and company after company is compelled to discontinue the services of valuable men and place a heavier load upon the backs of those who stand guard against bankruptcy. The reports on production are disheartening. And if we consider the immediate future, the outlook is not encouraging. But a glance to the backward and to the future may help. Even though we may never behold in this generation the prosperity of 1929, we nevertheless can look confidently forward to production records that will once again enable the industry to move forward with confidence.

THE QUESTION OF TAXATION

UNDER SECRETARY of the Treasury A. A. Ballantine, in an address before the American Mining Congress, pointed out some of the problems that face the Government in securing revenue. His views are sound, and we submit them for the consideration of those who are now and will be charged with the responsibility of securing and administering revenue laws and those who must pay the tax.

"Reduction in Federal expenditures will not alone suffice fully to restore the finances of the Government. There must be additional revenue as well. . . . It is clear that sufficient revenue from the new law is not yet in sight and that additional revenue should be provided. The Secretary of the Treasury has recommended . . . that there be imposed a general manufacturers excise tax substantially in the form appearing in the bill originally reported by the Ways and Means Committee of the House of Representatives during the last session of Congress. . . . The manufacturers excise tax is the best available measure for a broadly based addition to the revenues of the Government not likely to be unduly affected by fluctuations by business activities. . . . It would serve to supplement income and other taxes during the period when such other taxes have been demonstrated to be inadequate. The reduction of expenditures and the broadening of the tax base so vitally needed will not come without wide public support. Such support should be forthcoming as these measures guaranteeing the financial integrity of the Government are indispensable requisites of recovery."

IN DECEMBER much data was presented to indicate that the 44 State legislatures now in session would devote their time to "cost of government" and "taxation." For once the prognosticators were correct. Practically every State started its sessions with a flood of bills to reduce government expense and to secure sufficient revenue to maintain even the emasculated establishment. Running close on the heels of these two proposals come bills for the relief of unemployment; workmen's compensation; old age pensions; and shorter working periods. This is but the beginning. Nineteen thirty-three will undoubtedly go down in history as the greatest law-making year. The result may not be great, but the volume proposed will be stupendous.

THE QUESTION OF LEISURE

WITH MILLIONS OF MEN "enjoying enforced leisure," it is somewhat futile for the opponents of the 6-hour day to give as a reason that leisure is a dangerous thing. The idea will not hold water. With the universal adoption of even a 4-hour day, the leisure would not compare with the present situation. There will be much opposition to shorter hours by industry. A good deal of it is engendered by the very group that wants it most—the American Federation of Labor. Such statements as Mr. Green has hurled at employers and industry generally will not make friends for the idea. Industry, failing in some better plan, will undoubtedly find itself faced with shorter working hours. The question to be decided is what is the most desirable substitute for the present proposals.

CHAOTIC WASHINGTON

NOT FOR MANY YEARS has Washington been in such a state of chaos. Beginning with the statement by Senator Huey Long that "we Democrats want everything that is coming to us" and ending with the report of the Civil Service Census, Government departments have been in a state of confusion. Now that it seems certain that the President will utilize each of the thousands of Government jobs for "deserving Democrats," there is little to do but await the debacle. The departments on the whole have been efficiently manned. There are men in each department that can ill be spared, so far as the mining industry is concerned. It is to be hoped that sound judgment and efficiency will rule the action of the new administration, rather than political necessity or expediency.

COAL'S FUTURE

GEORGE H. CUSHING, exponent of the cause of coal, in his Survey believes that "coal's future will be determined within the next 10 years." He believes that in that period it will be decided whether coal is to function as a mere source of supply for the public utilities or will be an independent existence "as glorious as anything we have ever dreamed about."

It may be temeritous to question such an authority but it seems certain that the public utilities will supply an increasing percentage of heating, light, and small power requirements. If this is true, coal will function as a source of supply for public utilities. Coal's independent "glorious existence" can come only as a result of adjustment to those demands not otherwise and more satisfactorily provided by electrical transmission.



Commodity Prices . . . and Silver[†]

by

HON. KEY PITTMAN *

not only above the cost of production but to a level that will show a profit. When plant operations are reduced through loss of purchasers, carloadings fall off, and nothing can restore such loss save the restoration of the purchasing power of the people within our country. So again I repeat that all of our problems, both governmental and individual, are involved in the problem of commodity prices.

THREE IS NO OVERPRODUCTION as measured by the normal demands of our people for consumption. Production is less than it was prior to 1930, and yet our population has increased and the desires of our people for those things that they consumed prior to 1930 are unchanged. Surplus products in practically every country of the world have beaten down domestic prices. These surplus products, restrained from their natural foreign markets, have been thrown back on domestic markets with a natural inevitable destruction of domestic prices.

The cessation or stagnation of foreign trade may be due to several causes, but undoubtedly it is chiefly due to two major causes. Tariff walls erected by 41 governments of the world in the last few years, for the purpose of protecting their own markets against importation from foreign countries, have undoubtedly been a major cause in the stagnation of trade.

The depreciation in the currencies of most of the countries of the world, as measured by the gold standard, has had the same effect as a tariff wall and, in most cases, has multiplied the effect of tariff duty walls. Even Great Britain's currency, since she went off the gold standard basis, has depreciated over 30 percent. The currency of other countries has depreciated very much more. Great Britain today, in purchasing our products, must buy our gold exchange with her depreciated currency and then pay our gold standard price for our products. She can buy much more of the same products in countries where currency has depreciated.

It seems to me inevitable that we will be isolated from world trade unless we lower the value as related to gold of our own currency or the other countries of the world formerly on the gold standard have their currencies restored to their normal value with relation to gold. We do not desire, if it may be prevented, to lower the standard of value of our currency. It would have a disrupting effect upon our economic system and upon many of our financial obligations and indebtedness.

The difficulty of other governments returning to the gold standard is obvious. What aid our government may give them is not clear. The United States and France have nearly three-fourths of the monetary gold of the world. The problem of the redistribution of this gold, in the immediate future at least, appears almost insurmountable, and yet those governments that have gone off the gold standard can not return to the gold standard until the normal distribution of gold throughout the world has been restored. Let us for the time being, therefore, dismiss this problem.

THE WORLD PROBLEM is the commodity price problem. The prosperity of industry, trade and commerce depends upon the ability of people to purchase not alone the bare necessities of life but those things that make for comfort, enlightenment, high standards of living and happiness. This purchasing power ultimately goes back to the price commodities. The normal purchasing power that existed in most countries prior to 1930 has depreciated to its disastrous present level through the destructive depreciation in the price of commodities.

The agricultural problem—and the prosperity of agriculture is admitted to be the base of all prosperity—is the problem of raising commodity prices to a point where there will be a profit to the industry. Today many of our chief agricultural products must be sold below the cost of production. The effect upon the purchasing power of such producers is obvious. At least one-third of our people are directly dependent for their purchasing power upon profits derived from the products of agriculture. When these people are unable to purchase the products of the manufacturer, the manufacturer is compelled to reduce his output, and as he reduces his output he discharges labor. Labor, as a group, is admittedly second in importance as a purchaser in our domestic market. As labor is compelled to join the ranks of the unemployed, it also joins the ranks of non-purchasers, and thus continues the process of the necessary reduction in plant operations. This is a vicious and unending circle which can not and never will be terminated until the purchasing power of those engaged in agriculture have the price of their products raised to a level that will show a profit to the industry. The value of lands is dependent upon the profits that may be derived from them, and that in turn is dependent upon the profits that may be obtained from the commodities raised thereon. The value of manufacturing plants is determined by their earning capacity, and no plant operating on 15 or 20 percent of its normal capacity can show a profit.

So when commodity prices are below a profit level, then property values decrease. As property values decrease, the power of governments to obtain money from taxation decreases, whether such taxes be levied against physical property or income. So the budget problem is inevitably and eternally involved in the price of commodities. Our real problem can never be solved until the prices of commodities are raised

* United States Senator for Nevada.

† Presented to the Annual Meeting, The American Mining Congress.

THREE IS ANOTHER money exchange problem that is destroying our export trade. I refer to the problem involved in the tremendous depreciation of the price of silver and its consequent effect upon the exchange value of the silver money of silver-money-using countries with our gold standard money. Over half of the people of the world have no money save silver money. They have never used any other kind of money. To them it is money, good money, that maintains its par value within their own countries.

Take China as an illustration. The silver dollar, containing about the same amount of silver as our standard silver dollar, is the unit of money value in China. The fluctuation in the price of silver does not affect its purchasing power materially, if at all, within China. But when China seeks to purchase products of our country, she is compelled to pay our price for our products and in our gold standard money. What is the result? We only value the Chinese money at the price of the silver in the dollar measured by the world price of silver, which, as you know, is uniform throughout the world. The Chinese silver dollar contains about 78/100ths of an ounce. The world price of silver today is around 25 cents an ounce. So the value of the silver in the Chinese silver dollar, in exchange for our currency, is worth only about 20 cents. In other words, the Chinese importer has to pay nearly five of his dollars for one of our dollars with which to purchase our products. He can not afford to do it, with the result that he is only purchasing in the United States those things that are actually necessary in China and which China does not produce and can not purchase elsewhere cheaper.

This is not the worst of it. Gold is flowing into China to purchase cheap silver money with which to cultivate products which they once purchased in the United States and to build factories to manufacture those things which they once bought from us.

This same condition applies to every country where the ultimate purchaser must pay for our products in silver. We must raise the price of silver so as to raise the exchange value of silver money if we are to restore our exports to such countries and maintain our trade there. The question is, How may we do it? Silver has depreciated in value since 1928 from around 59 cents an ounce to its present low price of around 25 cents an ounce. Let us consider the chief cause in the depreciation of the price of silver. It was not due to overproduction, because the production of silver during that time has decreased from 260,970,029 ounces throughout the world in 1929 to approximately 130,000,000 ounces throughout the world during the first ten months of 1932.

While it has not been due to overproduction, it has been due to oversupply and a threat of unlimited oversupply. First, Great Britain, France and Belgium, after the war, started debasing their silver coins and throwing the residue of silver on the market of the world. This caused an oversupply measured by the normal demand for silver.

Then, in 1928, the British Government for India commenced to melt up its silver rupee coins that were in the Treasury and to dispose of the metal as bullion on the world market. The Treasurer for India was authorized to melt up any quantity of silver coins and to sell them in any quantities at any time and at any price. The sale of this silver commenced in 1928 and has continued. It has not only created a tremendous oversupply, with all of its bad effects, but the maintenance of the policy, the threat that accompanies it, and the vast supply of silver still available for such purposes has almost destroyed confidence as to any stable value in the price of silver. This must be stopped or offset. It may be stopped by an international agreement that governments will abandon, or at least suspend for a sufficient period of time, the practice and policy of melting up silver coins and disposing of the metal on the world market. If the Government for India refuses to enter into such a treaty, then other governments may place an embargo upon the importation of silver from India.

OUR GOVERNMENT may adopt an act which I have introduced to purchase silver produced in the United States at the world market price of silver and with silver cer-

tificates of the denominations of \$1, \$5, and \$10. This is not a new practice. It would cost our Government nothing. It would only expand our currency issue at the present time seven or eight million dollars annually in the form of these silver certificates, but it would take off of the market of the world the silver produced in the United States, which, to a certain extent, would offset the dumping from India of silver derived from the melting up of silver coins. If the governments of Canada, Mexico and Australia should pursue the same policy, then silver would be restored to its parity with gold as it exists with regard to our own silver coins in the United States.

The United States Government might accept, in full or partial payment, from Great Britain and other countries, silver at an agreed price, slightly above its world market price, in payment of the international obligations due the United States. This silver could be placed in the Treasury of the United States, part of it coined into silver dollars against which silver certificates would be issued, redeemable as are our present silver certificates with the silver dollar, if the holders of the silver certificates so desired. At the present market price of silver there would be surplus bullion for every dollar's worth purchased sufficient to coin three or more additional dollars to insure that the silver certificate issued would not depreciate below its par value. We have approximately \$550,000,000 of such silver certificates now in circulation. They are circulating at par. No one questions their soundness. The Government of India owes the British Government, so it is reported, about \$85,000,000. The Government of India desires to get rid of so much of its silver, so we are informed. India could pay its debt to Great Britain and Great Britain could utilize this silver to pay its debt to the United States without in any way impairing its gold reserve. This would exhaust the alleged excessive surplus of India and would induce India to enter into an agreement to abandon the practice and policy of melting up silver coins and disposing of the metal on the market of the world. This would insure for many years at least the restoration of the law of supply and demand based upon the normal mine supply which has been uniform through the ages and the normal demand which has been equally uniform. If there were any fear in the minds of those who shiver when the name of silver is mentioned that there would be an oversupply for the United States, then our Government could place a limit upon the quantity of silver that it would accept for such purposes.

OF COURSE, you and I know that the production of silver is as uniform as the production of gold, and that from the beginning of statistics covering hundreds of years there have only been 14½ ounces of silver produced to each ounce of gold. You know, as I know, that the only large available supply of silver in the world consists of 500,000,000 odd standard silver dollars lying in the Treasury of the United States, against which silver certificates have been issued and are in circulation. You know that when the British Government for India, in 1918, required 200,000,000 ounces of silver to redeem its silver rupee notes that the only place they could find a surplus supply of silver available was in the Treasury of the United States in the form of these same standard silver dollars, and we had to take them out and make them available to the British Government for India as a matter of war emergency.

Even the issuance of silver certificates against the large quantity of silver which might be taken into our Treasury, through the plan I have last suggested, would not place in circulation, in proportion to our gold reserves, as much silver currency as was in circulation in 1900 with relation to our gold reserves.

Through international agreement silver reserves might be gradually established in the treasuries of various countries, not in lieu of gold reserves upon which to base the gold standard, but as a support and relief to such gold standard. In my opinion, the easiest and the most direct relief to the economic situation throughout the world can be brought about through a larger use of silver money.

(Continued on page 30)

MINING EVENTS

METALS

THE YEAR-END REPORTS on metal mining for 1932 are interesting. Director Scott Turner, of the United States Bureau of Mines, in summing up the situation said:

"Selling prices of many mineral commodities are now lower than the average cost of production. Declines in prices have been about as severe as declines in production. Only gold, of course, remains unchanged in prices, and sulphur has held up well. Fortunately, costs of production have been lowered in many cases." Director Turner predicted that the economic levels of existing prices can not long continue to prevail. "It requires a severe stretch of imagination," he said, "to believe that the persistent trend of consumption of mineral commodities is permanently checked because of its pause and recession during the past few years. The requirement for mineral production is soundly based upon the aspiration of our people for higher and higher standards of living. This means manufacturing in which mineral raw materials are prime requisites."

A value of more than \$122,000,000,000 was ascribed to the mineral production of the United States during the 54-year period since 1880. Between 1880 and 1900 only twelve billions were received for the mineral production as contrasted with nearly \$110,000,000,000 worth of minerals won in the 31 years since 1900. Studied by 10-year periods, a rapid increase in mineral production is shown as follows: 1901-1910, sixteen billions; 1911-1920, thirty-seven billions; 1921-1930, fifty-three billions. Recent declines were noted of 43 percent in mineral production in 1931 as compared with 1930, or four and three-fourths billions of dollars worth of minerals produced in 1930 as against three and one-fourth billions last year. Metals declined 55 percent in production value, while the value of fuels declined 39 percent. Mineral commodities in the nonmetals group also declined 39 percent. Though the mineral industry, like other industries, is undoubtedly in a severe state of decline, this condition should be appraised as only temporary. The logic of the situation does not permit a pessimistic view of the prospects for the future.

DECLINES IN THE WORLD'S copper market

COPPER served to accentuate the dullness prevailing in the domestic market. According to the *American Metal Market*, "the domestic market has maintained its stability largely because of the foreign market, where there has been moderate buying at higher price levels than obtain here. The tariff of 4 cents a pound on imports of copper which went into effect on last June 21, was enacted on the plea that foreign copper be kept out of the domestic market, but it has not prevented the domestic producers from competing for foreign business, and despite this competition we actually witness a higher price level in Europe than is in effect here."

The *Wall Street Journal* reports: "Copper buying is quiet abroad and here. Foreign price is slightly lower and somewhat spotty. Most producers report little buying but a few have sold a fair tonnage."

"Domestic price is unchanged despite the small buying. Fabricators continue to ship against old contracts and are cleaning up back commitments rather than making new ones. Shipments into consumption are better than in December, but not as good as in January, 1932."

"The low price for copper is wearing down all the producers, abroad as well as here. This situation must in time force some agreement, but possibly, abroad, only lower prices can bring an accord. Here, the producers are in complete accord and no decline in domestic price is likely. In fact, an advance in price in the not too distant future is more to be expected than a further decline. It is, therefore, somewhat surprising that domestic consumers have not appreci-

ated greater the significance of the stability of price at 5 cents and the refusal of even the custom smelters to break this level in the domestic market.

"There is not a company which can make any money in the United States at the present price and rate of consumption. Some probably will shut down for the summer and spring, feeling that their employees will be able to fend for themselves better than in the winter; more mines may shut down this spring than many now expect. Should many properties shut down, price undoubtedly will advance, and such shutdowns naturally will begin to be announced in March or April. The beginning of these shutdowns will probably make itself felt in another two months in domestic price. Those carrying stocks at present are strong enough to be able to continue to hold them off the market. Another good sign is that during recent months domestic consumption has seemed to be ahead of production."

According to the U. S. Bureau of Mines, the smelter output of copper from ores of domestic origin in 1932 was about one-half that of 1931, and refinery production from domestic and foreign sources was 54 percent lower than in 1931. The quoted price of copper (electrolytic, New York refinery equivalent) was 7.025 cents a pound at the beginning of the year. The high weekly average price, 7.171 cents a pound, was reached in the week of January 16, from which level a decline started that continued, with only one important variation, until the end of the year. An upward swing in prices, that began early in August, carried the average from 5.025 cents to 6.025 cents in September and early October. The price dropped to 4.775 cents for the week ending December 17, a new low level for all time.

The smelter production of copper from domestic ores in 1932, from reports of the smelters showing actual production for 11 months and estimated production for December, was 528,000,000 pounds, compared with 1,043,000,000 pounds in 1931. The 1932 production was thus about one-half that of 1931; it was the smallest production recorded since 1921, exceeding the output of the latter year by only 4 percent.

The production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 443,000,000 pounds, compared with 1,075,000,000 pounds in 1931. The output of new refined copper from domestic and foreign sources in 1932 amounted to about 688,000,000 pounds, compared with 1,502,000,000 pounds in 1931—a decrease of 814,000,000 pounds. France was next with 61,549,678 pounds; Germany was third with 28,556,074 pounds; and Italy fourth with 26,643,306 pounds. In the entire year 1931 the United Kingdom received the largest quantity, 116,107,042 pounds; France was next with 112,194,531 pounds; Germany was third with 58,765,926 pounds; and Italy fourth with 42,925,187 pounds.

Refineries reported that at the end of 1932 approximately 980,000,000 pounds of refined copper would be in stock, a 6 percent increase over the reserve of 924,600,000 pounds at the end of 1931. It is estimated that stocks of blister copper at the smelters, in transit to refineries, and at refineries, and materials in process of refining, would be about 388,000,000 pounds on December 31, compared with 348,000,000 pounds at the end of 1931, an increase of 40,000,000 pounds, or 11 percent. Total smelter and refinery stocks at the end of 1932 were 1,368,000,000 pounds, representing an increase of 95,400,000 pounds, or 7 percent, over the previous record stocks at the end of 1931.

The quantity of new refined copper withdrawn on domestic account during the year was about 527,000,000 pounds, compared with 902,000,000 pounds in 1931, a decrease of 375,000,000 pounds, or 42 percent.

LEAD THE CONDITION in the lead and zinc industries was, to say the least, not optimistic. A report on the Tri-State field says:

"The zinc mining industry reached a point approaching extinction in the middle of the year 1932. In May prices dropped to a level of \$14 per ton, or the point at which zinc concentrates sold at the very beginning of the industry in the decade of 1870. When this level came production dropped to less than 1,000 tons per week for a period of two months in June and July. The year started out with prices for zinc concentrates at \$16 to \$18 per ton and held at that level for the first quarter. Then began the debacle to the low point of the year in May, when the average for the month was only \$14.55 per ton. Production almost immediately dropped from 3,000 tons per week to as low as 700 tons per week. Stocks had climbed to a level of 86,445 tons at the end of January, but from then on the stocks dwindled every month. When production dropped below 1,000 tons there was an immediate reaction in prices, which swept upward to an average of \$19.20 per ton in June and then sagged back to the \$17 and \$18 levels till September, when prices again swept upward, carrying prices to \$19.82 average for that month and then leveling off to the \$17 and \$18 levels for the remainder of the year. The average for the entire period was \$17.83. The outstanding feature of the lead industry of the district was the extremely heavy purchases of lead during the first month of the year, when 25 percent of the shipments of the year took place. The demand slackened off until August showed a minimum shipment of 770 tons. From that point the demand began to grow gradually, and the last quarter of the year approximated the same tonnage as did the month of January. The total shipments were 23,898 tons as compared with 26,807 in 1931. Production of lead showed much the same trend as zinc."

SILVER THE HANDY AND HARMON review of the silver market for 1932 contains many interesting facts relating to silver. World production is estimated at 160,000,000 ounces in 1932 as against 193,000,000 ounces in 1931. This amount of silver was increased by 10,000,000 ounces because of demonetized coins in Indo China and 11,000,000 ounces from Russia and 24,000,000 ounces sold by the Indian Government, making a total of 207,000,000 ounces in 1932, as against 262,000,000 ounces in 1931. The Russian supply consisted largely of the melting down of Russian coins required in order to meet the demand of foreign creditors. It is interesting to note that the Indian Government levies a tariff upon importations of silver equal to 44 percent of its current market price. This has resulted in the smuggling into the country of a considerable amount of silver, making the reports upon Indian consumption of silver somewhat questionable.

International Monetary Conference

THE MINING INDUSTRY has lost one of its leaders in the defeat of Tasker L. Oddie. He has worked indefatigably in the Senate for the mining industry, especially in regard to silver. Senator Oddie was chairman of the Senate Commission of Gold and Silver Inquiry in 1923-25, under the auspices of which the American Silver Producers Association was formed. The International Monetary Commission, to which the American delegates have not yet been appointed, is now in process of formation. The agenda is being worked out together with the date and place of meeting by a preliminary committee. Because of his leadership in silver, and because of his outstanding knowledge of the silver question, Senator Oddie is being considered as one of the American delegates. Among the questions to be considered will be silver, as this was included specifically in the invitation from Great Britain to the conference. In the closing hours of the last session of Congress, the State Department assigned to Senator Oddie the work of obtaining the necessary funds to defray the expense of the American delegates. He obtained the enactment of an amendment to the second deficiency bill making the necessary appropriation in accordance with the report of the Director of the Budget submitted by President Hoover to Congress.

Anti-Trust Law Study

THE HOUSE Judiciary Committee will embark upon an investigation of the various trust laws, according to the chairman, Hatton W. Sumner. The investigation is to be conducted with a view to modification of the anti-trust laws, to permit natural resources to make the grade during these depressed times. In inaugurating the investigation the committee feels that it is carrying out Mr. Hoover's wishes as expressed in his message to Congress.

Copper at Century of Progress

THE REMARKABLE DEVELOPMENT of the copper and brass industry in the last 100 years will be shown with all its romance at the International Century of Progress Exposition in Chicago from June 1 to November 1. The exhibit will be fostered by the Copper and Brass Research Association, as representative of the copper mining and copper, brass, and bronze fabricating companies in the country. It will be one of the features in the Mineral Industries Building.

The subject is one which lends itself strikingly to graphic presentation, for it was precisely 100 years ago that the copper and brass industry got a foothold in the United States. From a tonnage so pitifully humble that it hardly warrants description as such, the industry has developed in the century cycle until it is one of the country's foremost today.

Precisely 100 years ago, in January, 1832, the House of Representatives in Washington adopted a resolution calling for the gathering of statistics relating to the status of manufacturing in the United States, and reference to the report is interesting as applied to the copper and brass industry. The total annual consumption of copper and brass was approximately 500 tons, and even then it had doubled since 1820. The tonnage of copper and of brass was not segregated, but the amount of brass did not exceed 60 tons. In sharp contrast with the condition of 100 years ago is the fact that today the normal consumption of copper in the United States has grown from 500 tons to 1,000,000 tons. The peak of peace-time consumption was in 1929, when it was 1,119,400 tons.

More Silver Money Used

A NUMBER of countries have extended the use of silver money during the past two years, according to H. M. Bratter, of the Department of Commerce. Germany increased the legal maximum for silver coinage 25 percent and, as a result, has been a heavy purchaser of silver, stocks of silver having almost doubled in that country since 1929. France, Colombia, Cuba, Peru, and Rumania have increased the monetary use of silver. In the United States, silver represented in March only 12 percent of the total money in circulation. Standard silver dollars were less than six-tenths of 1 percent, while silver dollars and silver certificates together were only 7 percent of the total money in circulation. Of the standard silver dollars, more than 90 percent were held in Government vaults.

Increased Gold Shipments to Mint

SMALL SHIPMENTS of gold to the United States mint will bring the total of shipments to a new high record for the present fiscal year, states the annual report of the Bureau of the Mint. These shipments include much gold mined by the unemployed or contained in jewelry. There were 54,105 bullion deposits during the last fiscal year, as compared with 36,098 in the year before. During the fiscal year 1932 the Government acquired \$413,057,073 of gold through its various mint services, and at the end of the year the Government had \$1,793,838,454 in gold coin and \$2,124,767,363 in gold bullion. Industrial arts consumed in the fiscal year a total of \$29,157,865 gold, of which \$5,930,780 was new material; silver amounted to 33,682,119 fine ounces, of which 24,335,838 fine ounces was new material. Compared with the previous year, gold consumption decreased by \$13,500,000.

Exports and Debased Currencies

DEBASED CURRENCIES in foreign countries which have abandoned the gold standard have resulted in a continued decline in American exports, according to F. X. A. Eble, commissioner of customs. Meanwhile, "imports from

countries that have debased their currencies will tend to increase, and at a very low price," he predicted. "Japan has debased her currency over 50 percent and has increased her business with us in the first eight months of the year in amount and volume some 7 percent." Even Germany and France will import less from us than they sell, he believes. America is losing large sums of customs duties on goods that come from countries with debased currency on an ad valorem basis of duty, he pointed out in the hearings before Congress on the Treasury appropriation bill.

Production of Gold and Silver in the United States in 1932

THE BUREAU OF THE MINT, with the cooperation of the Bureau of Mines, has issued the following statement of the preliminary estimate of refinery production of gold and silver in the United States during the calendar year 1932:

	Silver, ozs.	Gold
Alaska	256,791	\$8,982,200
Alabama	6	600
Arizona	1,974,946	1,384,600
California	483,706	11,700,900
Colorado	1,786,701	6,339,400
Georgia	28	5,000
Idaho	6,733,760	854,300
Michigan	48,478
Montana	2,426,371	897,300
Nevada	1,347,871	2,688,100
New Mexico	1,218,568	494,400
North Carolina	9,095	10,500
Oregon	8,983	429,000
Pennsylvania	783	1,700
South Carolina	4	1,200
South Dakota	127,581	10,026,900
Tennessee	19,426	3,900
Texas	1,551	200
Utah	7,815,956	3,174,300
Virginia	200
Washington	17,997	87,700
Wyoming	329	32,900
Philippine Islands	146,147	4,719,000
Puerto Rico	11	2,100
 Total	24,425,089	\$51,836,400

Comparison with 1931 final production indicates increase in 1932 of \$2,309,200 in value of gold and decrease in 1932 of 6,506,961 ounces of silver. Comparison with the year of largest production, 1915, when gold amounted to \$101,035,700 and silver 74,961,075 ounces, gives reductions, respectively, of \$49,199,300 gold and 50,535,986 ounces silver.

India Supplies A Third of Gold Output

BRITISH INDIA released gold equal to 30 percent of the world production of the precious metal between January, 1931, and September, 1932, according to Department of Commerce information. Natives of India found it profitable to sell gold from their hoards of that metal. The output of gold went directly to the London bullion market for sale to the highest bidder. The price of gold soared in India as the rupee declined. Some of the gold has come to the United States direct. Recent estimates of India's stock of gold (India is known as "the sink of the precious metals," where they are hoarded and used for luxury purposes) vary from \$2,500,000,000 to \$3,000,000,000. Since 1873 India has imported gold to the sum of \$2,800,000,000. Between 1922 and 1930 India absorbed 27 percent of the world's mine production of gold, representing gold not available as a basis for currency and credit structure. India's gold consumption during that nine-year period amounted to 45,590,000 fine ounces, about \$963,000,000. Beginning in June, 1931, an outflow of gold began and it amounted to 4,630,900 fine ounces for the calendar year. The total outflow in 1931 up to September, 1932, was 11,386,700 fine ounces. The outflow of gold from India has occurred before, with a variation in degree, since the World War. Imports were reduced during periods of crop failure and depression. In 1920-21, for example, Indians sold gold because of the high price level. In succeeding years India resumed the absorption and hoarding of gold.

Accompanying this gold absorption, silver rupees were returned to the treasury. This condition is a partial cause of the large stock of rupees in the Indian treasury, the melting and sale of which has been noted repeatedly as the silver market. With the reversal of the gold flow into an export movement the return of silver rupees to the treasury has been checked and, to a certain extent, reversed.

Debt Payment by Mineral Imports Has Been Suggested

A PLAN reported to be under discussion in limited circles in Washington to "take out in trade" some of the war debts will affect mining. Briefly, the plan calls for the delivery to the United States of materials not produced at home and of use to the national defense in time of war. Manganese, tin, rubber, nickel, mercury, tungsten, mica and charcoal for gas masks are proposed as materials, in amounts set up by national defense experts, to be accepted by the Government in part payment of war debts. These materials are for stocks and are not to be used except to meet a national emergency. The plan is reported to aid Europe in two ways: offsetting the European lack of gold and no tax on the imports. American mining will be affected adversely on some of the materials.

Iron Ore 69 Percent Below 1931

IRON ORE mined in the United States in 1932, exclusive of ore that contained 5 percent or more of manganese in the natural state, is estimated at 9,588,000 gross tons, a decrease of 69 percent as compared with that mined in 1931, and was the lowest since 1885, according to the Bureau of Mines.

Ore shipped from mines is estimated at 5,364,000 gross tons, valued at \$13,042,000, a decrease of 81 percent in quantity and 82 percent in total value from 1931. Average value of the ore per gross ton at the mines in 1932 was \$2.43 against \$2.60 in 1931.

Stocks of iron ore at the mines, mainly in Minnesota and Michigan, increased 33 percent to 17,316,000 tons in 1932 from 13,063,708 tons in 1931. The stocks at the end of 1932 were the largest ever accumulated at the mines.—*From Wall Street Journal*.

Lead Output Down in 1932

THE OUTPUT of refined, primary lead from domestic ores in 1932 was 35 percent lower than in 1931, and was the smallest recorded since 1899, states the Bureau of Mines.

The output of primary, domestic desilverized lead in 1932 was about 150,000 tons; of soft lead about 69,000 tons; and of desilverized soft lead about 35,000 tons; a total output from domestic ores of about 254,000 tons of refined lead, against 390,260 tons in 1931.

Lead smelted and refined from foreign ore and bullion reached an output of about 33,000, compared with 52,504 tons in 1931.—*From Wall Street Journal*.

New "Silver" Plan

SENATOR DILL has introduced a bill providing that the Government purchase \$250,000,000 worth of silver. The Secretary of the Treasury would buy silver bullion at market price not in excess of \$1.25 an ounce. Silver certificates of \$5, \$10, \$20, \$50, and \$100 would be issued to the sellers as payment. The certificates would be considered as legal tender and could be used for any purpose. No action on silver monetization is likely at this session of Congress. The subject will be pushed actively at the expected special session.

MINING COMPANIES of the Northwest in which residents of Spokane and the Inland Empire are interested disbursed \$987,855 to their shareholders this year. The sum is comparable with \$8,495,046 in 1931 and \$16,627,950 in 1926. The disparity in dividends in these three periods is explained by the low ebb in the purchase of lead, silver, and zinc and the near minimum prices for them in 1932, a minimum in one at least.

COAL

THE SUBJECT in which the coal industry was interested during the month, from the national standpoint, was the bill before Congress, sponsored by Senator Black, of Georgia, calling for the adoption of the 30-hour week. Coal men were in evidence at the hearings, but the testimony was largely confined to the labor group. Mr. Philip Murray, vice president, the United Mine Workers of America, speaking before the Senate Judiciary Committee, said: "To give some faint idea as to the widespread misery in the coal mining industry . . . we estimate that 310,000 coal miners are unemployed at the present time . . . about 100,000 were displaced through the increased use of machinery. . . . In 1931 coal mines operated an average of 160 days; in 1932 an average of 130 days." To meet this situation he advocated that a paragraph be added to the Black bill, which would make unlawful the shipping of any product in any establishment that does not employ union labor, and operate on the six-hour day schedule. William Green, president, American Federation of Labor, has stated that labor is ready to use its "economic force" to bring about the adoption of this type of legislation.

The situation in regard to the Kelly-Davis bill and the Hayden-Lewis bill will be found in this issue under our review of legislative activities.

Both the American Mining Congress and the National Coal Association have under consideration their 1933 conventions. The former will probably hold two meetings, its usual spring convention and its annual meeting. Chicago is under consideration for the annual meeting of both organizations, while Pittsburgh and Cincinnati are being considered for the spring meeting of the Mining Congress.

An item of special interest is the effort of the railroads to increase their rates, as explained by a release from the Interstate Commerce Commission, as follows:

"An order of the Interstate Commerce Commission requiring railroads operating in intrastate commerce in a State to charge in such commerce 'rates which shall not be lower than the rates now in force and applicable to intrastate commerce within' such State 'plus the surcharges authorized by the findings in the Fifteen Percent Case, 1931,' on interstate traffic, entered under section 13 of the Interstate Commerce Act on a finding that the State commission's refusal to permit application of surcharges corresponding to those maintained on interstate resulted in unjust discrimination against interstate commerce, was void for failure of the Commission, in the Fifteen Percent Case, to make a finding that the rates as increased by the surcharges would be just and reasonable or that they would increase the carrier's future revenue. The Commission and the carriers involved contended, in a suit by the State and the State commission to annul and enjoin the enforcement of the order, that the case was a revenue case, as distinguished from a case involving particular rates, and that the rule obtaining in the latter class of cases—which requires a finding that the resulting rates would be just and reasonable—was not applicable.

"The court held that whether the case be treated as one involving unjust discrimination or undue prejudice against interstate commerce, or as a revenue case involving intrastate rates not contributing their proper proportion to the revenue of the carriers, and therefore casting a burden on interstate commerce, the order 'lacks the findings that are essential to support a destruction of the State's regulatory power.'

The National Coal Association filed a brief opposing the continuation of the surcharge, with the National Transportation Committee. Others joining in the protest are the Pittsburgh Coal Company, Western Pennsylvania Coal Traffic Bureau, and various State organizations. In addition other natural-resource industries, notably the lumber industry, are making an effort to prevent the adoption of the proposal.

THE EYES OF THE COAL WORLD have been centered upon the hearing before the United States Supreme Court on the appeal by Appalachian Coals, Incorporated, from the decision of the Federal District Court enjoining the defendant corporation from carrying out its proposed central selling agency plan. The appeal was supported by able arguments presented by Col. William C. Donovan and Edgar

L. Greever, while the Government was represented by Assistant Attorney General John Lord O'Brian. The request was granted for time in which to file a brief on behalf of the corporation, and it is anticipated that the final decision of the case will be made at an early day.

In reporting the case, the National Coal Association said: "The viewpoints of these counsel are not any closer together than they were before the three-judge court at Asheville last August; that is, as far apart as the poles. Government counsel contended that the Sherman Act was designed to insure free and full competition, destructive or otherwise, as against assertion of attorneys for the defendants that the Sherman Act, properly construed, simply laid down a rule of action, as defined by its author, and that restraint of competition must be shown to be unreasonable to be violative of the act. Disputing the contention that in Congress rested the sole source of remedy, they characterized the law as a living, constructive force which should be used to meet the workings of present economic forces, which, otherwise, they charged would lead first to widespread bankruptcy and then to huge monopoly.

"Justice Brandeis inquired as to what the Government would say should the court set aside the injunction and permit the corporation to operate to see whether conditions apprehended by the Government would result. Attorney O'Brian said that would mean the consumer would pay the cost of the experiment. He expressed objection. Justice Brandeis asked whether it would not be less objectionable under the Sherman Act for 137 producers to operate through a selling agent rather than combine into one corporation. This course had been approved in the case of the United States Steel Corporation. He stated the courts had already interpreted the law as permitting reasonable combinations and suggested it had been asserted the reasonableness or unreasonableness of the proposed corporation could not be determined except on facts developed by its actual operation. It might be difficult, he said, for the court to decide whether the proposed corporation was an abnormal development in the industry and therefore illegal without knowing how the selling agent would operate. Justice Brandeis referred to the potential capacity of the industry as a factor to be reckoned with upon the charge of restraint of competition and price-fixing."

GENERAL BRICE P. DISQUE, president of the Anthracite Institute, in an address before the New York Anthracite Club, on January 19, summarized the problems facing the industry. He said, in part:

"Our record through the current depression compares most favorably with that of other basic industries. Much of our tonnage loss is due to unnatural competition from other fuels which ordinarily depend upon industrial uses. Having become demoralized, they have invaded anthracite's proper zone on a price basis that can not be maintained.

"A large percentage of the losses incurred through this competition will be recovered, with readjustments downward in the price of anthracite and the inevitable increases in prices of other fuels. Anthracite will be on a parity with any fuel in its utility as automatic heat before the expected renaissance in home construction gets under way.

"We have many important problems to solve in distribution and merchandising. They are and have been under constant and intense scrutiny. They are complicated and difficult of solution, and in many respects will entail changes of habits and practices of almost a century's standing. They can not be hurried without danger of errors which might incur serious losses. All these matters are moving forward in an orderly manner towards a much better day for all interested in and loyal to anthracite.

"Today the major obstacle to better conditions in the industry is a situation over which it has no control, except in the ratio the industry's leadership and influence bears to those elements in the country at large."

Progress in Coal Mine Safety

FOR THE 10 MONTHS ending October 31, 1932, there have been 859 fatalities in the coal mines of the United States, against 1,234 for the same period of 1931, a con-

siderable saving of life, due, without doubt, in part to a material lessening of coal mining activity. However, the fatality rate per million tons of coal produced was but 3.03, which is much better than the 3.35 rate for the similar period of 1931; as the 1931 rate was the lowest, or best, in the present century, it now appears that unless something out of the ordinary occurs before December 31, 1932, the fatality rate per million tons of coal produced in the United States should establish a new all-time low record.

Four coal-producing States and Alaska have avoided fatal accidents in the first 10 months of 1932. These are: Alaska, Georgia, North Carolina, Montana, and Texas. The following States have had fewer fatal accidents in coal mines for the first 10 months of 1932:

State	Man-hour	Rate per million man-hours				
		Fatal- ities	Lost-time injuries	Killed	Injured	Total
Minnesota	15,627,640	4	201	0.26	12.86	13.12
Tennessee	3,096,385	2	65	.65	20.99	21.64
Alabama	6,617,006	10	134	1.51	20.25	21.76
Florida	2,467,433	1	89	.41	36.07	36.48
Michigan	23,176,443	21	926	.91	39.95	40.86
Alaska	5,923,536	5	239	.84	40.35	41.19
South Dakota	3,843,405	5	155	1.30	40.33	41.63
Texas	3,892,210	2	181	.51	46.50	47.01
Missouri	4,847,450	2	236	.41	48.69	49.10
Arizona	13,643,188	18	686	1.32	50.28	51.60
Virginia	2,074,731	...	116	...	55.91	55.91
Nevada	4,842,752	3	288	.62	59.47	60.09
New Mexico	4,662,256	8	278	1.72	59.63	61.35
New Jersey	2,197,488	4	151	1.82	68.71	69.53
Montana	10,652,990	15	772	1.41	72.47	73.88
New York	2,747,244	2	204	.73	74.26	74.99
Idaho	6,666,382	6	511	.90	76.65	77.55
Kansas	2,167,789	6	170	2.77	78.42	81.19
Utah	9,882,426	11	878	1.11	88.84	89.95
Oklahoma	2,846,145	1	309	.35	108.57	108.92
California	10,755,493	15	1,160	1.39	107.85	109.24
Colorado	4,991,260	9	559	1.80	112.00	113.80
Other States	8,555,607	8	397	.94	46.40	47.34
Total U. S.	156,177,259	158	8,705	1.01	55.74	56.75

* Compiled by the United States Bureau of Mines.

Illinois Coal Output Up

COAL MINED in Illinois during December totaled 4,125,449 tons, as compared with 3,672,965 tons in November and 4,096,595 in December a year ago, according to Illinois Department of Mines. This brought total production for 1932 to 31,452,794 tons, as against 42,793,476 tons in 1931. There were 147 mines operated during December, as compared with 136 in November.

Need for Coal Stabilization

MR. PAUL WEIR, vice president, Bell & Zoller Coal & Mining Company, of Chicago, in a statement before the annual meeting of the American Mining Congress pointed out:

"In recent years no industry has had such a thorough airing of its difficulties as has had the coal industry. Destructive competition between districts and between operators in the same district, together with intense competition from substitute fuels, has produced a condition with which all of us are familiar. All vital facts concerning the industry have been assembled and reassembled many times. There certainly is no lack of detailed information on any phase of production and marketing.

"Until about 10 years ago some degree of stabilization was afforded by restricted production at various seasons of the year due to transportation difficulties. Now the railroads have placed themselves on a basis where their transportation facilities are adequate to take care of abnormal demands, such as experienced during the British strike of 1926, when production in the United States reached a high peak.

"During the past 10 years the need for stabilization of some form has become greater with each succeeding year. In the battle for markets, prices have frequently sunk to a level below that which is even necessary to successfully meet the competition of oil and gas. There seemingly has been no end to the cycle of price cutting and wage slashes. It is also apparent if this stabilization does not come from within the industry that it will come with the assistance of outside agencies. My feeling is that we have passed the point at which the industry itself might be depended upon to solve its own difficulties and that we have reached the point at which outside help must be had.

"Stabilization can come only through restriction of production and through control of sales prices. Court decisions have indicated that these things must be legalized through legislative action, which action at the same time must protect the public. Coal must be sold at a profit. Experience has shown that when the coal industry is in a profitable condition, the miner is able to secure a wage consistent with American standards of living. To place the coal industry in a profitable position is to restore to the American coal miner his proper purchasing power and to restore to the coal operator his purchasing power for improved equipment.

"I firmly believe that the operator's problem today is not to oppose all legislative action but to make a sincere and united effort to present a constructive legislative program which, based on all available data, will protect the public, make possible an adequate wage for the miner, and give to the operator an equitable return on his investment."

Russia Gets Cheese for Gasoline and Anthracite Coal

AN AGREEMENT has been signed between the Soviet and Swiss cheese makers for the exchange of Swiss cheese for Soviet gasoline and anthracite coal, according to a report to the Commerce Department from its Berne office. The Swiss will deliver 50 10-ton carloads of cheese to the Soviets in exchange for the gasoline and anthracite coal. Swiss cheese exporters signed the agreements at their own risk, the report stated, while the Government is called upon only to the extent of delivering the necessary import permits.

Coal Mechanization Yearbook

THE YEARBOOK on Coal Mechanization, published by the American Mining Congress, 1932 edition, is ready for distribution. The Yearbook is divided into nine chapters: (1) The Necessity for Coal Mine Mechanization; (2) Progress in Modern Mining; (3) Mechanization in Foreign Countries; (4) Safety With Mechanical Mining; (5) Mining With Mobile Loading Machines; (6) Mining With Pit Loaders; (7) Conveyor Mining; (8) Scraper Mining; (9) Face Preparatory Operations. About 100 pages are devoted to showing photographs and brief descriptions of machines manufactured for cutting, shearing, drilling, and loading. The volume contains more than 300 pages.

Coal Royalties Must Pay Income Tax

COAL ROYALTIES were held to be income for Federal tax purposes in a decision of the Supreme Court of the United States handed down this month in the case of the Bankers Pocahontas Coal Company vs. Commissioner of Internal Revenue. Although it was contended that under state laws leases of coal constituted sales of coal in place, and the royalties were received by the petitioner coal company after the effective date of the Sixteenth Amendment, the court held to the ruling in a previous case, Burnet vs. Harmel, decided November 7, 1932, which was an oil case. In the coal case the petitioner acquired, in 1912, West Virginia coal lands, in fee and by assignment from the prior owners, certain leases or contracts with various coal operators for the production of coal on a royalty basis. In determining the petitioner's income tax for 1920 to 1926, the Commissioner of Internal Revenue treated the royalty payments, after deducting a depletion allowance of 3.6 cents per ton of coal mined, as taxable income, and assessed an increase in the tax. The case was appealed and sustained by both the Board of Tax Appeals and the Court of Appeals for the Fourth District.



LEGISLATION

WASHINGTON HAS BEEN as bad as the proverbial "three-ring circus": It has lost its dignity; it is full of froth, turmoil, hard work, political battles; bitter feuds, and the caldron of politics has boiled over repeatedly. Washington the beautiful, has become Washington the fearful. For the end is nearing for many political ambitions. The Civil Service Commission has just announced that according to their survey, President-elect Roosevelt will have at his disposal some 65,000 government jobs to distribute among "deserving Democrats"; in addition, there are some 19,000 postmasterships for reassignment. Therefore the frenzy is not all on Capitol Hill, where the Honorable Huey Long has furnished amusement for the people, if consternation for his fellow members.

It is inevitable that after the 4th of March there will be radical change in all government departments. New faces are scheduled for practically every key position. This fact, coupled with the constant talk about reorganization, is doing its best to undermine efficiency. Nevertheless, the endless procession of red tape is still as entangling when results are sought.

There is much legislation that should be passed before the present session slips into history. Whether it will be, or not, is debatable. There is a very definite air of obstruction, and of leaving most things that can be left, to the incoming Congress. Here and there agencies are frantically working to push legislation through. Hearings are being held daily, and almost hourly. Committees are swamped.

Between speculation on the new Cabinet, and the political upheaval, it is certain that Mr. Roosevelt will call a special session immediately after the 4th of March. The Democrats now in Congress are being subjected to considerable criticism because of their failure to "balance the budget" and to cut government costs. If this is not accomplished in the present session, the demand for a special session will be tremendous. The budget, taxation, the war debt, the considerable number of grave problems to be solved, indicate a special session. Both Representative Rainey, House majority leader, and Congressman Collier, chairman of Ways and Means Committee, recently stated that "there will be no tax legislation at this session of Congress."

AMONG THE IMPORTANT MATTERS now before Congress is the bill presented by Representative Hill, concerning depreciated currencies. The effect of depreciated

foreign currency upon our tariff rates, is either to greatly reduce or entirely wipe out the benefits to the protected list, and permit the sale in our markets of articles now on the free list, at prices so low as to destroy our power to compete. The present disposition of Congress (January 20) is to do nothing about the matter until after March 4. In the meantime our markets will be so stocked with goods as to seriously further retard our economic recovery.

Control bills relating to the coal industry are still before Congress in the form of the Hayden-Lewis Bill and the Davis-Kelly Bill. Executive session of the House Interstate and Foreign Commerce Committee was held early in January, and a special effort was made to revive the Davis-Kelly bill by the holding of additional hearings. The motion was defeated, although that is not the last of the bill. Meantime, the report of the Congressional Committee looking into the constitutionality of this legislation is awaited with interest.

The Hayden-Lewis bill is resting more or less quietly. No action at this session is anticipated on this bill, which is patterned after the British Coal Mines Act which has been in operation since 1930. The American Mining Congress is conducting an investigation on the results that have been obtained in Europe under this act.

A sub-committee of the Senate Judiciary Committee has conducted hearings on the Black Bill, which provides for the compulsory adoption of the 30-hour week by all industry. A similar bill, sponsored by Congressman Connelly, of Massachusetts, is before the House Committee on Labor. The bill is, of course, sponsored and actively supported by the American Federation of Labor and the labor organizations generally. Those opposing the bills are the manufacturing groups, although much active opposition has appeared throughout all industry. A surprising number of producers, however, are not opposed to the adoption of the 30-hour week, although opposed to some of the provisions of the Black bill. The provisions of both bills are that "there shall not be shipped, transported, or delivered in interstate or foreign commerce any article or commodity in production of which any mine, quarry, mill, cannery, workshop or factory, or manufacturing establishment, here or abroad, is permitted to work more than five days a week, or six hours a day." Philip Murray, vice president, United Mine Workers of America, appearing before the committee considering the bill, advocated that the following paragraph be inserted: "or in which it is made a condition of employment, that the workers engaged in such manufacture or production, shall not

belong to, remain, or become a member of a labor organization, or in which they shall be denied the right to collectively bargain for their wages through chosen representatives of their own." The inclusion of such phraseology would make the Black Bill on a par with the Davis-Kelly Bill, and equally objectionable to the coal industry.

ON JANUARY 17 the first supply bill passed Congress. This was the first annual appropriation bill to be sent to the President at this session. The bill carried, beside the appropriation provisions, an amendment requiring all tax refunds above \$20,000 to be passed on by the Congressional Joint Committee on Internal Revenue Taxation. The bill carried appropriations of about \$31,000,000.

The Silver bills have been considerably in the limelight, due to the discussion of a balanced budget, depreciated currency, and the banking proposals. The House Committee on coinage, weights and measures will hold hearings on a bill proposing to establish an auxiliary monetary reserve of silver, as an aid in stabilizing commodity prices. Chairman Somers has invited bankers, economists and monetary experts to appear and present their views. Senator Dill has presented a bill, seeking to authorize the Secretary of the Treasury to purchase silver by issuance of silver certificates to the extent of \$250,000,000, and fixes the price of silver bullion at a market price in excess of \$1.25 per ounce.

The following bills of interest to mining are before Congress:

TARIFF. To prevent importations from the Republic of France. (H. R. 13992—Schafer, referred to Ways and Means Committee.)

DEPRECIATED CURRENCY. To prevent loss of revenue, to provide employment for American labor, and to maintain the industries and agriculture of the United States against the effects of depreciation in foreign currencies. (H. R. 13999—Hill, of Washington, referred to Ways and Means Committee.)

MONETARY CONFERENCE. Authorizing an appropriation for the participation of the United States in an international monetary and economic conference to be held in London. (H. J. Res. 536—McReynolds, referred to the Committee on Foreign Affairs.)

SILVER. To establish an honest money system where the medium of exchange will give equal benefits to every American citizen and wherein the lawful money of the Government shall be used for the benefit of all the people, to reduce the rate of interest on loans, to encourage agriculture and the ownership of homes, and for other purposes. (H. R. 14061—Sinclair, referred to the Banking and Currency Committee.)

LABOR (Six-Hour Day). To prevent interstate commerce in certain commodities and articles produced or manufactured in industrial activities in which persons are employed more than five days per week or six hours per day. (H. R. 14082, also H. R. 14105—Connery, referred to the Committee on Labor.)

LABOR. Joint resolution proposing an amendment to the Constitution of the United States conferring upon the Congress power to regulate the production and marketing of commodities and to prescribe minimum and maximum hours of labor during an emergency. (H. J. Res. 545—Christgau, referred to Committee on the Judiciary.)

MONETARY. To authorize the Secretary of the Treasury to use scrip, and for other purposes. (H. R. 14203—Palmisano, referred to the Ways and Means Committee.)

TAXATION. Concurrent resolution authorizing the printing of additional copies of the preliminary report of the Committee on Ways and Means relative to double taxation. (H. Con. Res. 46—Vinson of Kentucky, referred to the Committee on Printing.)

SILVER. To authorize the Secretary of the Treasury to purchase silver by issuance of silver certificates and for the redemption of the same, and for other purposes. (H. R. 14281—Steagall, referred to the Committee on Coinage, Weights and Measures.)

SILVER. To extend the Federal reserve currency, to coin

silver, and to prohibit the exportation of gold. (H. R. 14299—McSwain, referred to the Committee on Banking and Currency.)

SILVER. To establish a bimetallic system of currency employing gold and silver, to fix the relative value of gold and silver, to provide for the free coinage of silver as well as gold, and for other purposes. (H. R. 14300—Shallenberger, referred to the Committee on Coinage, Weights and Measures.)

SILVER. To authorize and direct the Secretary of the Treasury to issue Treasury notes and silver certificates, and for other purposes. (H. R. 14304—Steagall, referred to the Committee on Banking and Currency.)

THREE ARE 44 State legislatures in session. All have been busy, and as predicted taxation and reduced government costs are taking the limelight, with bills to end unemployment, and to aid labor taking high rank. The following bills have been presented in mining states:

Idaho

THE TAX MORATORIUM bills sponsored by Governor C. Ben Ross, of Idaho, to prevent foreclosure on farms and homes throughout Idaho, passed both houses of the Legislature without opposition, and became law with the signature of the Governor immediately afterward.

New Jersey

A COMPULSORY EMPLOYMENT RESERVE system is proposed in a bill (S. 48) introduced in the New Jersey Legislature. It would provide for a state-wide system of unemployment reserve funds under a plan approved by the American Association for Labor Legislation and is said to be similar to a measure offered in the New York Legislature.

Texas

GOVERNOR MIRIAM FERGUSON of Texas has sent a message to the legislature, recommending enactment of a law imposing a tax of 3 percent on all commercial purchases in Texas. The governor estimates the proposed law would bring in an annual revenue of \$45,000,000, which would be more than sufficient to balance the state budget. One effect of the measure would be to relieve land and realty owners of all state and valorem taxes, the governor declared.

Pennsylvania

A BILL INTRODUCED in the Pennsylvania State Senate would abolish the Department of Mines and transfer its duties to the Department of Internal Affairs.

Iowa

DECLARING that the conduct of public business in Iowa is being carried on "under a system devised and adapted to the horseback and stage-coach period," Governor Clyde L. Herring told the Legislature that the first duty of the session is to reorganize the governmental machinery in the interest of economy and greater efficiency. He commended the work of the interim legislative committee which conducted an investigation looking to reductions in public expenditures, and urged prompt consideration of the recommendations for tax reduction.

Colorado

THE OLD AGE PENSION law enacted by the Colorado Legislature in 1931 has been held unconstitutional by the State Supreme Court. The Supreme Court held that the bill granted judicial powers to county commissioners in allowing them to review the awards of the county judge. It also held that the act took away from the county commissioners the "sole control of county purse strings," in that it gave the county judge power to direct expenditure of money. Senator Ira L. Quiat, of Denver, sponsor of the legislation two years ago, has announced that he will introduce a new old age pension bill at the present session of the Legislature to care for the objections raised by the State Supreme Court.

A bill providing for a state bonding department, to write surety bonds for state, county, school district and municipal officers, was among those introduced on the first day of the session of the Colorado Legislature.

(Continued on page 29)

MODERN MINING PRACTICE

Consumption of Electrical Energy in Coal Mining

Digest from paper by E. B. Lamb, West Virginia Engineering Company, The Harlan Mining Institute, Harlan, Kentucky, May 14, 1932

NO PERMANENT GAIN can be obtained from overloading equipment. The final result will be less production, greater maintenance cost, greater power cost and greater depreciation of equipment. Likewise, no permanent gain can be obtained through failure to keep equipment in good operating condition. The cost of maintenance is least at those operations where equipment is kept in good condition through regulation inspection and repair. These operations also save through eliminating loss of time from breakdowns and loss of power through the use of inefficient equipment.

The application of electricity by the mining industry varies greatly with local conditions. The fact that this variation in use is considerable, even among companies in the same locality, makes it difficult to discuss power consumption in general terms and emphasizes the necessity for individual study to determine the correct remedy for excessive power use and cost. However, through this district the majority of mines can segregate their power consumption into six general divisions.

To give some idea of how these general values run, the power consumption for 10 companies has been averaged. These companies are located in the Harlan, Hazard, and Tennessee Fields and were selected chiefly because they have no large unusual loads with which to contend. Their average monthly tonnage is 15,364 tons. Their average monthly kw.h. consumption is 70,722 or 4.6 kw.h. per ton. The following figures show the division of their kw.h. consumption:

1. Ventilation	17.9%
2. Coal Preparation	4.1%
3. Coal Production	43.4%
4. Conversion Losses	13.7%
5. Camp Load	16.1%
6. Miscellaneous	4.8%
Total	100 %

An excessive amount of power is not generally used in this field for the preparation of coal. Three companies of the above group are using power at this point for hoisting slate and where this is necessary, the power used is, of course, increased.

It is interesting to note the percentage of power used for actual coal production, i. e., hauling, cutting and mechanical loading. Contrary to the general trend of thought, the consumption for this purpose often runs below 50 percent of the total power used. However, this load represents the largest single part in the above segregation and special consideration should be given the fact that a large portion of the power so used always goes into transmission losses. The necessity for using 250/275 volt direct current results in high current flow and heavy losses that under excellent conditions are seldom less than 10 percent of the power so used. Losses of from 25 percent to 30 percent in direct current distribution are not unusual.

Hoist Design and Construction

Digest from paper by Lucien Eaton, "Engineering & Mining Journal," November-December, 1932

HOIST DESIGN AND CONSTRUCTION" is discussed by Lucien Eaton in the November and December issues of the *Engineering & Mining Journal*. Formulas are given for calculating rope stresses and horsepower of the hoist, and various hoisting arrangements

as used in this country and abroad are described. Two innovations from usual practice are described in the following paragraphs taken from his article.

The hoisting system used for passenger elevators has in a few instances been successfully applied to cages. In some installations a hoist of the ordinary type is used, but at Morenci, Ariz., a regular elevator hoist with multiple ropes is installed on top of the headframe. The hoist is controlled from the cage through flexible cable, one end of which is attached to the bottom of the cage and the other to the timbers of the shaft, halfway down. The limit of depth for this type of hoist at present seems to be about 1,000 ft., because at that depth the load on the flexible cable approaches its tensile strength. Operation is safeguarded by numerous electrical devices, and apparently, only a short step is involved in progressing from this type of control to the automatic system used on many of our new high-speed passenger elevators.

Automatically controlled hoists are started by the man who fills the skips. He pushes a button or pulls a cord, which closes a relay, which in turn starts a small motor attached to a drum controller. This motor accelerates the hoist, and is automatically cut out when the hoist is up to speed, and can not be started again until the controller is reversed. Deceleration is accomplished by a cam, driven by a shaft geared to the drum of the hoist, which pushes the controller back at a predetermined rate. When the skip has reached the proper point in the dump, it shuts off the current, applies the brake, and reverses the controller. By this type of control the operators' wages are eliminated, and the hoisting cycle is shortened by the amount of time that would be lost in signaling.

A recent development in signals for hoisting is an induction system, operating on the same principles as a radio, a description of which has been published in this journal and by the U. S. Bureau of Mines. This system was originated by Mr. L. D. Stewart, electrical engineer for Oglebay, Norton & Company at Ironwood, Mich. By means of loud-speakers and a telephone, signals can be given from the cage, and telephonic communication in both directions between the cage and the engine house can be carried on while the cage is in motion or at rest. This system has been in use only a short time. Although it appears to possess certain advantages, it has not yet established itself in general practice. The ability to telephone directly to and from the cage is desirable, but it can be done in other ways. Cages operated like passenger elevators usually have a telephone circuit in the same cable as the control.

Coal Mine Haulage

Digest from article—Transportation Costs at the Wheelwright Mines, "Coal Age," December, 1932

BY REPLACING SMALL CARS with larger and more modern equipment and of larger capacity, by improving the track, relocating sidetracks, decreasing excessively heavy gradients, overhauling locomotives, using roller bearings, improving power distribution and introducing a dispatching system, the Inland Steel Co., has increased its tonnage per main-haulage locomotive at Wheelwright Mines 78.0 percent and has augmented its production per gathering locomotive 68.0 percent.

Transportation problems at Wheelwright are similar to those ordinarily found in bituminous mines where the coal is of the same thickness. Trackage has been divided into three classes: Class A (main haulage roads) is new 60-lb. rail laid on 5 x 7-in. untreated white-oak ties; Class B (all tracks on face entries and secondary haulage roads), 60-lb. relaying rail on similar ties; Class C (all heading and room track), 30-lb. rail laid either on 4 x 5-in. hardwood or on steel ties. On Class A and B No. 4 standard turnouts are

used, installed according to a standard plan. Both No. 2 and No. 3 turnouts are being used on Class C track, but the No. 2 turnouts formerly installed are gradually being replaced by No. 3 switches.

Although all the track has not yet been brought up to these standards, 12,800 ft. of Class A and B track has been laid since the Inland Steel Co. took over the property and, wherever room entries had 20-lb. rail, that track has been replaced with 30-lb. rail. At a central point inside the mine, a motor-operated bending and straightening machine has been installed which will handle rail of all sizes from 20 to 60 lb. per yard inclusive.

At all switches, refuge holes were cut in the strata, and lights were installed. Where necessary, traffic lights control trip movements, and a signal system of red and green lights controls the movement of the haulage locomotives from a section just in by the mine portal. With these exceptions, a dispatcher at a central point in the mine directs all haulage by telephones located at each section and sidetrack. Two 15-ton, and one 10-ton locomotives haul the coal to the outside and thirteen 6-ton locomotives gather the coal.

To obtain favorable haulage conditions, a nearly uniform distribution of direct-current power is required. This has been assured by the installation of a new substation, additional feeder lines and improved bonding practice. Continuity of service is essential, and power interruptions must be reduced to the minimum; such conditions have been obtained through the installation of 10 automatic direct-current reclosing circuit breakers so placed that the mine is properly sectionalized.

New mine cars of all-steel construction with stub axles and 14-in. wheels replaced the old. Their over-all length is 13 ft. 3 in.; width, 6 ft. 3 in.; and the height above the rail, 24 in.; wheelbase, 42 in.; and track gage, 42 in. Capacity of the car is 88 cu. ft. level full. To replace 650 wooden cars and 260 steel and wood cars, 525 cars were purchased. As against a capacity of 1.25 tons for the old cars in Mine No. 1 and 1.50 tons for those in No. 2 Mine, the new cars haul an average of 3.00 tons; they make 2.28 complete trips for coal and slate in a day's run.

Haulage Records at Wheelwright Mines No. 1 and 2

	Old Haulage Record	Present Haulage Record
Number haulage locomotives.....	4	3
Number gathering locomotives.....	20	13
Cars coal daily per gathering locomotive	98	79
Cars slate per gathering locomotive....	11	13
Daily tonnage gathering locomotive....	146	245
Cars coal daily per haulage locomotive..	418	342
Cars slate daily per haulage locomotive..	84	66
Daily tonnage per haulage locomotive..	577	1,027

The Axe Hazard

Digest from paper by D. Harrington, Safety Engineer, U. S. Bureau of Mines

ON NOVEMBER 1, 1931, a coal mining company in Kentucky at the suggestion of one of the safety engineers of the Bureau of Mines caused all axes to be removed from the mine and instituted a system of supplying timber posts, cap-pieces and wedges of suitable dimensions to allow of timbering the working places by using these timbers and placing them with relatively small broad-faced sledges and one-man cross-cut saws. From January 1 to November 1, 1931, when the axes had been used, the miners had sustained eight finger amputations and four serious leg cuts through using axes for various purposes in this mine; from November 1, 1931 to November 1, 1932, the employees of this mine suffered not a single severe injury in the nature of a cut. Later on, largely as a result of giving the Bureau's Accident Prevention Course in the Harlan County, Kentucky, region in 1931, axes were removed from several mines belonging to the Harlan County Association and as a result there were but nine fingers cut off and no serious leg cuts from use of axes in the mines of the association from January 1 to November 15, 1932, while there had been 39 fingers

cut off and 10 serious cuts made in the legs of users of axes in the mines of the association in 1931 before the campaign was waged against the axes. Here is an instance of the utility of "keeping track" of the causation of accidents with subsequent taking of suitable action to prevent future occurrence of them.

Safety in Arizona Mining

Digest from address by W. E. Hunter, Arizona Industrial Commission to National Safety Council

ACCIDENTS THROUGHOUT THE MINES of Arizona have shown a marked improvement in the past few years, and much of this is no doubt due to both the very efficient mine inspection department and the Arizona Industrial Commission, although perhaps the far greater credit should be given to the mining companies themselves for their whole-hearted spirit of cooperation toward everyone interested in the betterment of conditions for their employees.

Practically every large company of the state has a very efficient organization headed by a safety engineer who usually reports to the general manager. The duties of these safety organizations are to inspect all working conditions, machinery, etc., also to supervise the training of employees in first aid, and mine rescue.

There is a growing realization among safety departments that a long set of drastic rules is ineffective as the average working man either can not, or does not, take the time necessary to learn or properly acquaint himself with these. Bearing this in mind, the various safety departments in the state have made their rules as short and as few as possible and are carrying out a very intensive system of education for the working man.

Practically every mine in the state uses electrical blasting for certain work, and at least one large copper mining company uses electrical blasting exclusively for all work on their property. This mine also uses an inert primer consisting of a wooden plug into which is inserted an electrical detonator. Since the adoption of this system, which has been in use for over two years, this company has not had a single accident that can be attributed directly to blasting.

Many of the ores of the state contain silica in amounts sufficient to be harmful to employees when breathed in the form of dust. In order to combat this hazard it is required by law, that all drilling underground must be done wet and water is applied directly to the machine at the cutting face. This system of drilling has been responsible for a very marked decrease in pulmonary diseases. After several years of wet drilling, mine owners have found that this method is much more efficient and economical than any other and the miners themselves have come to realize that it is much more healthy.

Because of the fact that much timber is used the fire hazard is an ever present one. To combat this a great many of the shafts in our larger mines, together with the level stations, are concreted throughout. Where concreting has not been done spraying devices have been installed in the shafts.

In some instances electrical and fire hazards are minimized by the elimination of trolley haulage, compressed air locomotives being used in its stead. This system of haulage also aids materially in ventilation. To insure safety where concentrated haulage is necessary, elaborate electrical block signaling systems, augmented in many instances by magnetic track switches, controlled from a central station, are used.

Protective devices for individuals are used; the most common of these are the hard hat, hard-toed shoes, and goggles. Safety belts are also used where men are performing work where there is a hazard due to falling.

Climatic conditions within the state make it necessary to use extreme precautions in the storing and handling of explosives. Because of the intense heat explosives are prone to deteriorate rather rapidly and the state legislature passed a law making it a misdemeanor to use within the confines of the state explosives more than one year old. All explosives sold within the state must have the date of manufacture stamped directly on the cartridge.

All mines, regardless of their size or number of employes, are rigidly inspected at least once every three months by the state mine inspector or one of his three deputies. Strict adherence to all state laws is required and the mine inspector has within his power the right to prevent any company or individual from performing work in such a manner as is in the opinion of the mine inspector hazardous.

Credit must be given to the U. S. Bureau of Mines, whose representatives have always been extremely active in putting over safety campaigns, first-aid and mine rescue training, and the betterment of safety conditions in general throughout the mining industry. Thousands of men have been trained by representatives of the above organization within the State of Arizona, many companies having their entire personnel trained in first-aid.

We also feel that the National Safety Council has been a great aid in the furtherment of safety within the state. Many of the larger mines, as well as the smaller ones, are contributing members of this Council and receive posters which they post daily in a conspicuous place where all the workmen can read them. They have also profited greatly through the various other services rendered by the Council.

In closing I wish to state that I feel all the various agencies mentioned, including industries of all sorts, are cooperating in every way for increased safety, subjugating individual interests for the betterment of the whole. Although the goal has not been reached, I feel that great strides have been made in the past and still greater ones will be made in the future.

Electrification At Oak Hill Colliery

Digest from paper by W. A. Thomas, "Coal Age," December, 1932

BY COMPLETING THE ELECTRIFICATION of its operations the Pine Hill Coal Co., Minersville, Pa., effected a saving of 30 cents in its costs of operation. Included among these changes were the electrification of the hoist and main fan and the haulage on two of the levels at the Oak Hill shaft.

At present the Oak Hill shaft is 906 ft. deep, but eventually it will be extended to a depth of 1,200 ft. As steel cars weighing 4,800 lbs. and loaded with 10,000 lbs. had to be hoisted in this shaft, the original operating cycle called for a 1,200-h.p. motor, on which construction was commenced.

After the motor castings had been made, a change in the cycle was deemed advisable, necessitating a greater motor capacity. Fortunately, the drums of the cylindro-conical-cylindrical hoist had not then been cast, and the design of the latter could still be revised, which change, with the cooperation of the Vulcan Iron Works, was satisfactorily effected. Fortunately, also, the General Electric Company was able, by closing the end bells of the 1,200-h.p. motor and making other slight changes, to raise the continuous rating of the motor to 1,600-h.p. Forced ventilation of the motor was provided by a small Jeffrey 5-h.p. fan and the combination gave excellent results.

To replace mule haulage on the Third Level of the Oak Hill mine, a Jeffrey permissible battery locomotive with 48 Exide MV 33 cells was installed. Because of the limited side and overhead clearance, the locomotive was of somewhat abnormal length. The tracks were of the character often encountered where tunnels cut into pitching beds and has curves as sharp as 15-ft. radius.

Standard locomotives have a wheelbase 40 and 42 in. long where the tracks have a gauge of 36 in. It was concluded, in conference with F. C. Hohn, the transportation engineer, to increase the wheelbase to 56 in. and, in order that the wheels of the locomotive should not bind on the curves, their gauge was decreased from 36 in. to 35½ in. The operation of this locomotive has been highly satisfactory; so much so that a second unit was ordered later for the Sixth Level development.

Another somewhat unusual installation at the Oak Hill mine is the automatic-starting synchronous-motor-driven mine ventilating fan. This is a Jeffrey unit with a wheel of 10-ft. diameter and capacity of 224,000 cu. ft. against a 3-in.

water gauge. A 150-h.p. motor was required, and to safeguard automatic operation and obtain power-factor correction a 200-h.p. 80 percent power-factor motor was applied. Motor speed is reduced to 166 r.p.m. through a Link-Belt herringbone speed reducer.

On the completion of the electrification the normal power factor was found to vary from 82 to 84 percent, and it was decided to install a 420-kva. capacitor, or static condenser, which has increased the power factor to 91 percent, and thus made a large saving in the cost of purchased power.

The 30 cents saving covers only the completion of the electrification; a large saving had been made earlier by the electrification of the breaker, most of the underground haulage, the air compressor and several of the ventilating fans. Power is received at Oak Hill Colliery at 66,000 volts and is stepped some 8,000 ft. apart.

Rotary Car Dumpers Are Set on a 19-Degree Pitch

Digest from article in "The Hercules Record," December 1932

THE CONTINENTAL COAL COMPANY of Fairmont, W. Va., have a very interesting installation at their Brock Mine, near Cassville, W. Va. Prior to 1927 this was a shaft mine, but that year it was converted to a slope mine, and at the same time that the incline was built other equipment was installed which brought the entire tipple facilities up to date. The shaft has since been used as a man hoist.

One of the principal features is the rotary car dumpers which are rather unique for two reasons; first, they are four car lengths long—that is, dumping four cars at one time; second, both dumpers are set on a 19-degree pitch, which means that the load is always on the rope. This idea was advanced by the Continental Coal Company and it has worked with marked success. The grade of the incline is 34 percent. Four cars are handled each trip at a speed of 1,200 ft. per minute. The gross load handled per trip is about 23 tons.

Fireproof Stoppings—Advantages and Disadvantages

Digest from paper by Leslie S. Voltz, Assistant Engineer Black Mountain Coal Corporation, before Harlan Mining Institute

FIREPROOF STOPPINGS are those constructed either of brick, vitrified hollow tile, monolithic or plain massive concrete and concrete blocks. The disadvantages of fireproof stoppings are (1) the difficulty in breaking through them, (2) high first cost of construction and (3) the claim of some authorities that a strong stopping intensifies explosions. The advantages of such stoppings are (1) safety in fires, that is, prevention of spread, (2) help in fighting fires, (3) additional safety as a seal for unventilated works, and (4) low yearly ventilation cost per stopping.

The difficulty in breaking through a stopping would depend upon the type and thickness used. It would be quite a job to break through a 12-in. to 18-in. concrete stopping where the use of explosives would be impossible due to a fire on the other side. This seems to give an advantage to the use of one of the other three types before mentioned as they could be gotten through more easily, however, neither of them have the strength or fire resisting qualities of concrete.

The high first cost of fire proof stoppings is an apparent disadvantage which in the end is actually an advantage for such types. Any of the four fireproof stoppings named have low annual cost over a period of years when not only first cost but also cost of renewals, maintenance and air leakage are considered.

Some authorities argue that a strong stopping tends to make more severe the effect of an explosion, which, if true, would be a decided disadvantage to fireproof stoppings, particularly those built of concrete. This theory is not borne out by the results obtained by trials in the U. S. Bureau of mines experimental mine at Bruceton, Pa., as the following

quotations will prove. "Hundreds of instances of no checking of an explosion have been found after mine disasters, although every stopping in the mine had been blown down. The relief afforded by weak stoppings therefore is of doubtful value and their use has certain disadvantages. Such stoppings are usually leaky, and if disaster does occur, every stopping has to be renewed before the mine ventilation can be restored."

Undoubtedly a great advantage of a fireproof stopping is the prevention of a fire spreading. A second advantage, that of being a help in fighting fires, depends much upon conditions and the location of the fire. In many fires the fireproof stoppings already in place have been of aid in sealing off areas saving the time and dangerous work of constructing them after the fire is under way.

The third advantage of fireproof stoppings, that is, the additional safety as a seal for unventilated areas, is most obvious. Often such areas are filled with methane and in case a seal burns out volumes of this gas may be liberated and mixed with oxygen to form an explosive mixture in the presence of the fire. This occurrence might start anything from a slight local explosion to one of disastrous proportions traveling through the mine as a dust explosion.

Low yearly ventilation cost per stopping, the fourth advantage of a fireproof stopping, is an indirect advantage, however it is an important one as any one of the four named stoppings give the maximum ventilating efficiency at a low annual cost per stopping. A study of U. S. Bureau of Mines Bulletin 99, by Williams, proves that in their investigation of stoppings they found that the four previously named types had the lowest annual cost of all other types over a 15-year period of use.

In conclusion it seems the only real disadvantage to fireproof stoppings is the difficulty in breaking through such stopping. This is far outweighed by the proven advantages and it therefore seems that a fireproof stopping is the most desirable type for use in coal mines.

Safety Record of the Union Pacific Coal Co.

Digest from "Employees Magazine," December, 1932

October, 1932

District	Man-shifts	Injuries	Man-shifts per injury
Rock Springs	10,332	4	2,583
Reliance	4,336	1	4,336
Winton	5,631	1	5,631
Superior	8,978	0	No injury
Hanna	6,126	0	No injury
All districts	35,403	6	5,900

Period January 1 to October 31, 1932

District	Man-shifts	Injuries	Man-shifts per injury
Rock Springs	77,855	20	3,893
Reliance	30,178	7	4,311
Winton	43,884	12	3,657
Superior	69,012	8	8,627
Hanna	48,515	8	6,064
All districts	269,444	55	4,899

Digest from Recommended Practice Section, Coal Division, The American Mining Congress

THE STANDARDIZATION DIVISION of the American Mining Congress has just published a 45-page booklet with 36 drawings covering American Recommended Practices for Frogs, Switches and Turnouts for coal mine tracks. This standard was formed by a Sub-committee on Frogs, Switches, and Turnouts under the chairmanship of R. L. Ireland, Jr., vice president of the Hanna Coal Co. This sub-committee is a division of the Underground Transportation sectional committee. This standard is introduced by the following foreword:

The standard track gage shall be 42 in.

Under certain conditions, such as demands the use of cars to meet low-roof mines, etc., necessitating a narrower gage

than 42 in., then 36 in. and 30 in. is recommended. Where conditions are such as to justify a wider gage than 42 in., then 48 in. and 4 ft. 8½ in. is advised. Regardless of the alternates, the standard gage of 42 in. shall be used whenever possible.

The rails adopted as standards are as follows: For room turnouts 20, 30, and 40 lbs. per yard; for main haulage 40, 50, 60, 70, and 80 lbs. per yard.

Standard frog numbers and angles shall be as follows:

	Angle
No. 2	28° 04' -21"
No. 2½	22° 37' -12"
No. 3	18° 55' -29"
No. 4	14° 15' -00"
No. 5	11° 25' -16"
No. 6	9° 31' -38"

For mines having A. M. C. Standard 42-in. gage, the following frog numbers are recommended:

Nos. 2, 2½, and 3 for room turnouts.

Nos. 3, 4, 5, and 6 for main haulage turnouts.

Nos. 5 and 6 being especially recommended where traffic is fast.

Lengths of switches and the number of frog with which they are to be used shall be as follows:

3'-6" switch for use with No. 2 frog, for 20, 30 and 40-lb. rail.

5'-0" switch for use with No. 2½ and No. 3 frogs, for 20, 30, and 40-lb. rail.

5'-0" switch for use with Nos. 3 and 4 frogs, for 40, 50, and 60-lb. rail.

7'-6" switch for use with Nos. 5 and 6 frogs, for 40, 50, and 60-lb. rail.

10' switch may be used as an alternate with a No. 6 frog where conditions warrant.

While 70 and 80-lb. rail have been recommended on main haulage, detailed recommendations concerning frogs, switches and turnouts have not been given for these rail sections. These details will of necessity be different from those for lighter rail sections and are at present under consideration and recommendations for same will be submitted in the future.

Centrifugal Separator for Recovery of Placer Gold

Digest from paper by J. B. Girard, "Mining Journal," November 15, 1932

AMONG THE NEW MACHINES, there is a centrifugal separator, the principal of which is novel and new and entirely different from any other centrifugal machine. The process employed utilizes the centrifugal force within a rotating barrel. The principle involved, whereby gold and other heavy metals are separated from the materials in which they are contained, is that the centrifugal force increases the effective difference in the specific gravities of the gold, or metals, and the gravel to such an extent that a much faster separation is obtained than by any process using the force of gravity alone. The machine consists of a rotating drum, mounted on trunnion wheels. A hopper and spout feed the ore into the small end of the rotating drum, and the tailings discharge from the large end.

The operation of the machine may be described as follows: Upon starting the machine, the barrel is empty, it is rotated rapidly (200 r.p.m.) and dry ore is fed into the barrel from the hopper. Due to the speed of the rotation, the material entering the barrel is caught by centrifugal force and clings to the barrel. This is continued until sufficient material has been introduced to build up a collecting cushion, which assumes a cylindrical form. This is built up until its diameter is only a few inches greater than that of the discharge or outlet end of the barrel. The machine is now charged and ready for operation. The speed is now carefully regulated and must be under accurate control during operation, so that the particles on the surface of the collecting cushion will be on the verge of falling as they reach the top of the circle with each revolution.

This may be exemplified by swinging a bucket of water in a vertical plane: if the speed is great enough the water re-

mains in the bucket, if not great enough, it will fall out, and there is a critical speed, where it is just on the verge of falling.

With the machine running at this critical speed, the particles at the top of the circle have no weight, and those at the bottom have double their normal weight. This keeps the collecting cushion soft and spongy, so that it does not pack or harden. With the barrel rotating at the proper speed, the ore, mixed with a small amount of water, is fed into the barrel from the hopper. This material being inside the critical radius, is constantly churned and agitated, at the same time being under the influence of the centrifugal force within the barrel. As particles of gold come in contact with the spongy collecting cushion, they penetrate into the cushion displacing the lighter material.

The ore is fed continuously and the machine operated until it is desired to clean up. The usual practice has been to clean up once a day, but this is not necessary. After the run is finished the machine is stopped and the collecting cushion with its embedded gold is removed from the barrel. In the machine, which has been handling 250 cu. yds. per eight-hour shift, these concentrates amount to 8 cu. ft., thus concentrating the ore 840 to 1. These 8 cu. ft. of concentrates are in turn passed through a smaller, or clean-up machine, which reduces the concentrates to $\frac{1}{4}$ cu. ft., thus making a concentrate of 26,880 to 1. The final residue is panned to recover the gold.

In February, 1932, the machine shown was constructed. It was first operated on a property near Kirkland, Ariz., for a test run. The tests on the placer gravels were satisfactory in every respect.

The machine was then moved to Mexican Gulch, a one and one-quarter cubic yard dragline was secured for the excavating, and a shaking screen with three-quarters inch mesh was used above the hopper. The over-size was grizzled off before running over the screen. The plant was operated for about two months during which time over 70,000 cu. yds. of overburden were moved and 10,000 cu. yds. of pay dirt put through the machine.

From the Mexican Gulch property, the machine was moved to Greaterville in Pima County, Arizona, where some 5,000 yds. of material from Ophir Gulch were tested.

The water consumption of the machine varies with the kind of material being treated. The pay dirt at Mexican Gulch contained an appreciable amount of clay and required 45 gallons of water per minute to treat a maximum of 250 cu. yds. per 8-hour shift. For sands and gravels, free from clay the water consumption is about half this amount. The maximum consumption of water in the exceptionally heavy clay found at Greaterville was 60 gallons per minute.

Among the interesting releases from Government sources are:

"COMPRESSED AIR FOR OPERATING MODERN COAL MINING EQUIPMENT," prepared by H. D. Currie, and released by the United States Bureau of Mines. The paper describes the manner in which the Jamison Coal & Coke Company has increased efficiency through use of compressed air, and covers haulage, undercutting and drilling, and the compressor plant.

"FALLS ON ROOF AND COAL IN THE BOOK CLIFFS AND MASATCH PLATEAU COAL FIELDS OF UTAH," by Herbert Tomlinson, released by U. S. Bureau of Mines, and is a summary of data obtained at 12 mines, representing 70 percent Utah coal production.

"MINING METHODS AND COSTS AT A VANADIUM MINE," by Blair Burwell, released by U. S. Bureau of Mines. Paper describes deposit, method of mining, equipment, and presents table of costs.

"STUDY OF MINE ROOF OF THE PITTSBURGH COAL BED," by J. W. Paul and L. N. Plein, presented by U. S. Bureau of Mines. Paper gives results of studies and covers typical operating practice. Sketches are particularly clear in illustrating conditions encountered.

"ACCIDENT EXPERIENCE AND COST IN TENNESSEE COAL MINES," by F. E. Cash, presented by U. S. Bureau of Mines, and discusses frequency, severity and cost of accidents.

"METHODS AND COSTS OF MINING FERBERITE ORE AT THE COLD SPRING MINE," by William O. Vanderburg. Presented by U. S. Bureau of Mines, and discusses mining practice, methods and costs.

"SHAFT SINKING METHODS AND COSTS, and COST OF PLANT

AND EQUIPMENT AT THE MACASSA MINE, KIRKLAND LAKE, ONTARIO," by G. A. Howes and Chas. F. Jackson, published by U. S. Bureau of Mines.

"THE INTERNATIONAL CONFERENCE ON MINE SAFETY RESEARCH AT BUXTON, ENGLAND, JULY, 1931," by George S. Rice. Published by U. S. Bureau of Mines.

"SAFETY PROGRESS IN ANTHRACITE AND BITUMINOUS COAL FIELDS," by D. Harrington. Presented by U. S. Bureau of Mines, and describes safety performance of these industries.

"TEN YEARS OF FATAL ACCIDENTS AND TWO YEARS OF ACCIDENT COSTS IN INDIANA COAL MINING," by C. A. Herbert. Presented by U. S. Bureau of Mines.

"SAFETY PRACTICES AT MINE 1, SPRING CANYON COAL COMPANY, OF UTAH," by D. J. Parker. Presented by U. S. Bureau of Mines.

DESCRIPTION OF THE PROPERTY AND OPERATIONS AT THE LEWISTON DREDGE, LEWISTON, CALIF.

Digest of paper by

Lawrence K. Requa, released by the U. S. Bureau of Mines

THE PROPERTY being worked by the Lewiston dredge of Placer Development (Ltd.) is in Trinity County, Calif. At present the property consists of about 500 acres. It is being worked with one 7-cubic foot Bucyrus-type dredge, which has an average monthly capacity of about 100,000 cubic yards. To the end of 1931 approximately 10,000,000 cubic yards of gravel had been dredged.

The dredge is capable of digging 38 feet below water level and can carry a 15-foot bank above water line in front of the dredge, making a total digging depth of 53 feet. The total width that can be dug in one swing is slightly over 200 feet and the shortest swing that will permit progress of the dredge is about 90 feet. The hull, which is constructed of Oregon fir, has a length of 100 feet, a width of 43 feet, a depth of 9 feet, and a draft of 8 feet.

The digging ladder measures 81 feet 3 inches from tumbler center to tumbler center. There are 72 7-cubic foot buckets in the bucket line, each weighing over a ton. The average life of a bucket lip is 8 to 12 months. The digging ladder is driven by a 150-h. p. motor. The ladder-hoist winch is likewise geared to this motor, but in such a way that the hoist can be run independently of the bucket line. The movements of the dredge are controlled by an 8-drum winch, belt-driven by a 25-h. p. variable-speed motor. From this winch run the four bow and stern swing lines, and the lines to raise or lower the spuds.

For the year 1929 the cost per cubic yard was \$0.0797, as follows:

Labor	\$0.0255
Superintendency0033
Supplies0325
Power0137
Office expense0003
Insurance0032
Taxes0012
Total.....	0.0797

Bureau of Foreign and Domestic Commerce Services

THE BUREAU of Foreign and Domestic Commerce of the Department of Commerce offers six paid services relating to minerals in lieu of the free service formerly offered. This change in policy was brought about through the Economy Act of Congress. A uniform charge of \$1 each is made for these annual services. Briefly described these services are:

Minerals and Metals Foreign Trade Notes. Bi-weekly. Current trade information written for United States firms interested in the international movement of and foreign markets for mineral raw materials, primary metals and manufactured products. These data have a current value depending on prompt publication. Brief trade notes are developed frequently from voluminous reports.

Petroleum Foreign Trade Notes. Bi-weekly. Notes on the foreign markets for petroleum collected from the reports coming to the bureau from many sources are published in this service for American business firms.

International Coal Situation. Monthly. Foreign markets for coal are analyzed in brief paragraphs giving specific information about trade opportunities in foreign countries. Imports of coal into the United States and exports, imports and stocks of coal in foreign countries are included.

HAVE YOU HEARD—?

FEDERAL GOVERNMENT has resumed tax collection of \$2 a ton on coal imports from Germany and Great Britain.

TWENTY ECONOMISTS urge settlement of war debts by lowering tariffs by reciprocal action and maintenance of gold standard. Advance idea to President-Elect Roosevelt as program for economic recovery.

EIGHT HUNDRED MILLION board feet of Russian timber will be imported in this country in 1933.

ARTUR NOTMAN, in the *New York Sun*, says that "in the good old days" if a business man failed to make success, he quit; but in the present era, he "goes to Washington" to have something done about it.

A GROUP of Cincinnati business men have asked the University of Cincinnati to discontinue its course of lectures on economic conditions, because of their "gloomy character," which is unwarranted.

SINCE DECEMBER, 1930, the United States Government has spent \$3,471,000,000 more than its receipts. National debt increased in the same period 30 percent.

E. A. FILENE, Boston merchant, believes that we are facing an industrial revolution, and predicts universal six-hour day, five-day week, and high pay.

SENATOR DILL, of Washington, has introduced a bill providing that the Government shall purchase 250 millions' worth of silver; fixes minimum price of purchase at \$1.25 an ounce.

ALFRED P. SLOAN, Jr., President, General Motors Company, believes that "research, invention, improvement of labor-saving devices are more important today than ever." States he is a firm believer in the idea "that we do not know how little we know about what we can do."

AMERICAN FEDERATION of LABOR estimates that unemployment has reached an all-time peak of more than eleven and one-half millions.

INTERNATIONAL LABOR office urges world-wide "short-week" be adopted, thus restoring a purchasing power of some \$26,000,000,000.

PRESIDENT-ELECT ROOSEVELT wants "special powers" to effect economies in government, thus eliminating pressure of organized groups on Congress to prevent the adoption of program.

AMERICAN FEDERATION of LABOR will "invoke its economic force" to compel adoption of five-day week, six-hour day.

NATIONAL ELECTRIC LIGHT ASSOCIATION passes out of the picture with the formation of the Edison Electric Institute. Power Industry takes a new code of ethics, which covers publicity on earnings, contracts between holding and operating companies and methods of operation. Manufacturers will not have membership in new organization.

AMERICAN PETROLEUM INSTITUTE has appropriated \$130,000 for display of its wares at the Century of Progress; eight oil burner companies have contracted for space; the Petroleum Heat & Power Company has taken 25,000 feet of floor space, and the American Gas Association has appropriated \$100,000 for an exhibit. Four model homes, heated by gas, oil, electricity, will be on display. Coal has as yet made no plans to be represented.

SENATOR KEY PITTMAN, of Nevada, declares that over half the people in the world have no money other than silver money. He advocates the passage of his bill to purchase silver produced in the United States at the world price, and the use of silver certificates to expand our currency about eight million dollars. He suggests that silver be taken in payment of international obligations due the United States.

J. F. CALLBREATH, secretary of The American Mining Congress, believes that with Congress and 44 state legislatures in session, all pledged to reforms that involve the mining industry, that the time has arrived for the industry to determine for itself just what it wants done, and present a united front.

CONGRESSMAN DAVID I. LEWIS proposes in his bill now before Congress, to stabilize the coal industry through a "Coal Operators National Council," composed of 50 members from 30 coal producing districts; bill grants to Federal Government power of "arbitration and supervision."

EWARD H. PATTERSON, Jr., president of the Hudson-Mohawk Casualty Company, declares that "Workmens' Compensation Insurance is being conducted as a racket," and demands a shakeup from top to bottom of the Compensation Insurance Rating Board.

NORMAN THOMAS, Socialist candidate for President, rejects wide recommendation of various groups within his party that its name be changed, and thus eliminate the handicap of Socialism. Party expresses surprise and regret that their poll in the recent election was so small.

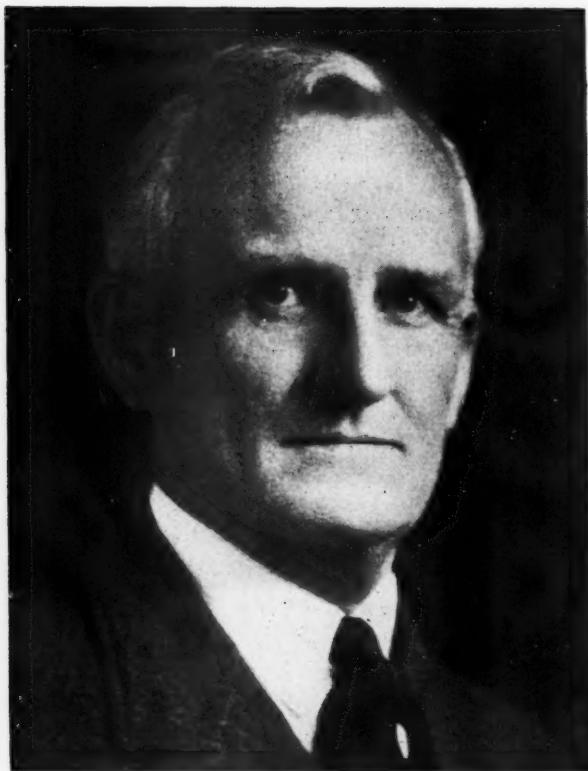
PROFESSOR E. R. A. SELIGMAN, of Columbia, declares that the sales tax plan is inequitable and an undesirable form of taxation. Advocates that Federal Government meet deficit by borrowing on anticipated liquor revenues. He advocates modification of income tax and increase in gasoline tax.

SENATOR WHEELER will push his plan for remonetization of silver before Congress, declaring that this is only alternative for the United States if all other nations forsake gold standard.

ROBERT E. TALLY, president, United Verde Copper Company, advocates a revision of the anti-trust laws which "might be effective only during periods of subnormal prices." He believes that all agreements or understandings should be under the supervision of the Federal Trade Commission. He urged congressional action, and insisted that it be compulsory as there are many selfish producers who would let their competitors assume the burdens while they share benefits.

FEDEDERAL PATRONAGE census compiled by Civil Service Commission estimates that the Democratic Party will have available some 65,000 positions, in addition to the 15,000 postmasterships.

PERSONALS



Donald B. Gillies

President, Corrigan, McKinney Steel Company, and newly elected Director of The American Mining Congress

J. B. WARRINER, president, Lehigh Navigation Coal Company, and president, The American Mining Congress, has been in Washington conferring with officials of that organization upon the work for 1933.

THOMAS G. FEAR, general manager of operations, Consolidation Coal Company, Fairmont, W. Va., has resigned, and has accepted the position of assistant to the president, H. C. Frick Coal Company, with headquarters at Scottdale, Pa.

D. A. REED, manager of the Elkhorn Division, The Consolidation Coal Company, has been appointed general manager of operations of that company.

S. L. MATHER, vice president, Cleveland Cliffs Iron Company, has returned to Cleveland, after a European trip, where he spent the holiday season with his daughters.

MILNOR ROBERTS, head of School of Mines, University of Washington, has been elected a trustee of The Northwest Mining Association.

GEORGE A. ANDERSON has been appointed commercial agent for the Lehigh & New England Railroad.

A. W. ROBERTSON, chairman of the board, Westinghouse Electric & Manufacturing Company, presented a paper on "The Scientific Approach to Human Affairs" before the annual meeting of the American Society of Mechanical Engineers.

HON. LOUIS DOUGLAS, Congressman from Arizona, recently spoke before the Mining and Metallurgical Society.

ROBERT E. TALLY, vice president, in charge of operations for the United Verde Copper Company, attended the annual meeting of his company in New York.

HOWARD I. YOUNG, president, The American Zinc, Lead and Smelting Company, was in New York in December, and attended the annual meeting of The American Mining Congress in Washington, where he was elected a director of that organization.

DONALD B. GILLIES, president, Corrigan, McKinney Steel Company, has been made president of the Newton Steel Company. He is also president of the N. & G. Taylor Company.

L. E. WOODS, president, Crystal Block Coal Company, was recently elected president of the Operators Association of Williamson Field.

C. B. AMES, president, The Texas Company, has been elected to head the activities of the American Petroleum Institute for 1933.

JOHN LORD O'BRIAN announces that he has resigned as the assistant to the Attorney General of the United States, and that he has resumed the general practice of law and his membership in the firm of Slee, O'Brian, Hellings & Ulsh, with offices at 37 Church Street, Buffalo, N. Y.

AT RECENT MEETINGS of the directors of Koppers-Rheolaveur Co. and The American Rheolaveur Corp., Mr. J. I. Thompson was elected president of both companies to succeed Mr. Percy S. Gardner. Mr. Thompson is also vice president of The Koppers Construction Co., with which company he has been associated since its organization.

E. A. WILLIFORD, division manager, National Carbon Company, is in California for several weeks.

E. W. PARKER, Anthracite Bureau of Information, spent several days in Washington during January.

THE DAVIS COAL AND COKE COMPANY of Baltimore announces that J. A. Morgan, formerly engineer at its New York office, has been made district engineer of the Philadelphia territory and will be located at the company's Philadelphia office in the Land Title Building.

D. A. CALLAHAN, president, Callahan Lead-Zinc Company, and a director of The American Mining Congress, is a member of the Idaho State Senate, where he is a member of its committees on Finance, State Affairs, Judiciary, and Mines and Mining.

ASSOCIATION ACTIVITIES

THE AMERICAN MINING CONGRESS held its final meeting of its Manufacturers Section, Coal Division, at Pittsburgh, Pa., January 23, to determine upon whether they will hold an Exposition in May, 1933. Final report of the Committee will be released about February 1.

THE NATIONAL SAFETY COUNCIL has announced that its 22nd annual Safety Congress will be held at the Stevens Hotel, Chicago, Ill., October 2-6, 1933.

NATIONAL COAL ASSOCIATION has appointed a special committee, headed by Mr. T. B. Davis, to determine upon the date and place for the holding of its 1933 Convention. Chicago is seriously under consideration, and plans will be announced shortly. The committee met in New York January 26.

K. U. MEGUIRE, president, Dawson Daylight Coal Company, Louisville, Ky., has been elected president of the West Kentucky Coal Bureau. Their annual meeting was held early in January. The new vice president is R. R. Kirkpatrick, general manager, Beech Creek Coal Company, Beech Creek. The members of the Executive Committee now are: C. F. Richardson, president, West Kentucky Coal Co., Sturgis; J. E. Palmer, president, Diamond Coal Co., Providence; C. M. Martin, president, Greenville Coal Co., Greenville; Brent Hart, president, Hart Coal Corp., Mortons Gap; A. W. Duncan, president, W. G. Duncan Coal Co., Greenville; C. D. Major, Beaver Dam Coal Co., Louisville, and D. D. Duncan, general manager, Crescent Coal Co., Bevier. C. E. Reed was reelected secretary.

GENERAL BRICE P. DISQUE has been elected president of the Anthracite Institute taking the place of Mr. S. D. Warriner, chairman of the board, Lehigh Navigation Coal Company. The program announced by the Institute for 1933 is broad in scope and shows a determination among the anthracite operators to meet their competitive fuel problem.

FRANK H. GALE, manager of conventions and exhibits of the General Electric Company, has been retired at his request after 43 years of service with the company. L. W. Shugg has been appointed division manager of the publicity department to succeed Mr. Gale in charge of that work.

Mr. Shugg entered the employ of the General Electric Company in 1902 and since 1903 has been in the exhibition work of the company. He is director of exhibits for the National Electric Light Association, and the American Mining Congress; is president of the exhibitors' committee of Industrial and Power Shows, and director of the electrical group of that organization; is vice-chairman of the manufacturers' division of the National Sand and Gravel Association; and is a member of the board of directors of the National Crushed Stone Association. He is a past-president of the National Railway Appliances Association, and was chairman of the exhibits committee of the American Electric Railway Association a few years ago.



L. W. Shugg

BOOK REVIEW

by

M. W. von BERNEWITZ

MAN AND METALS, a *History of Mining in Relation to the Development of Civilization*, by T. A. Rickard. In two volumes, 506 pages and 543 pages, illustrated, index, and 1,207 citations to the literature. Whittlesey House, McGraw-Hill Book Company, New York, 1932. Price, \$10.

ALWAYS TO THE DEFENSE of the miner and mineral industry, Rickard (T. A.) found that "The Outline of History," by H. G. Wells, with whom he studied under Thomas Henry Huxley, omitted to pay proper regard to the part that mining has played in the development of civilization. And always to the fore in the correct usage of terms, Rickard commences with definitions of mining, including metal and mineral, and of civilization. But civilization is menaced by the misuse of the very products (weapons of metal) that were essential to its advancement.

Civilization did not begin until metals became the material of tools, implements, and machines; by the aid of metals man emerged from savagery. . . . The Age of Metals did not begin until man discovered that he could fashion them by aid of fire. Moreover, from the melting of native metal it was still a big step to the smelting of ore. The critical event, one of the most portentous in the history of man, was the first smelting of metal out of stone, in 4000-3500 B. C. . . . It is evident that the mining of gold and copper exerted a powerful influence on the civilization of Egypt, by supplying material for commerce, for making implements of war, and tools of industry, for manufacturing jewelry and other ornaments, and for decorating the palaces and tombs of the kings. . . . The races that migrated from central Asia into Syria and into the Mediterranean Basin carried with them the passport of civilization—the use of metals. . . . The silver mines of Lourum were the property of the State, which leased them to its citizens. . . . The first mineral to become a source of revenue to the Roman State was salt. Later, they mined copper in Spain and lead in Britain, which is fully described. . . . Under "Mining in Medieval Times" we read that the structure of civilization in western Europe was demolished and for many centuries after all the arts and manufactures, including mining and metal-working, were in abeyance. But salt was needed, and the search and working of metals was gradually resumed. Even in 1460, miners were migratory in their habits and the population followed. At this time Agricola (whose *De Re Metallica* was translated by President and Mrs. Hoover) enters the picture. . . . At first, in the dawn of civilization, all mines belonged to the ruler of the land; the natural deposits of gold and silver, more particularly, were the property of the monarch, who exploited them with the labor of criminals and captives. But gradually the miner advanced from serf to artisan and adventurer, and did as he pleased. . . . A long chapter tells of the Conquistadores in Mexico and South America, and another of the Later Argonauts relates what happened in California and the West, and in Australia and Transvaal. (The Argonauts of 1932 were considered in a recent number of *The Saturday Evening Post*). . . . A good chapter traces the use of coal and its present use, another the first use of iron and iron in human industry, and then the part played by the miner as a pioneer of industry, nowhere better illustrated than in southern Africa. . . . In the romance of modern mining (President Hoover once stated that there is no romance in mining, only hard work) we are entertained by the discoveries at the Comstock, Leadville, Cripple Creek, Ouray, Mount Morgan, Broken Hill, Cool-

(Continued on page 30)

MODERN MINING EQUIPMENT

Blakstix—A New Blasting Agent

BLAKSTIX is the name of a new patented blasting agent for coal blasting announced by the Atlas Powder Company, Wilmington, Del. Development of this powder is an illustration of the application of modern research to meet a special problem in coal production. The study of the action of Granular Black Powder and Pellet Powder indicates that the action of these explosives often tends to produce checked coal which is of lower grade and crumbles in transportation and storage. Checking or destruction of the fiber of coal is due to the violence of the force from the explosive used. Blakstix is made of the same ingredients as Granular Black Blasting Powder and Pellet Powder, but it is so processed in cartridge form that the gas development is of low violence; as a result, the gas takes hold and gains purchase of the burden of coal and pushes rather than hurls the coal from its position.

Blakstix runs approximately 124 1 1/4 x 8 inch cartridges per 50-pound case and is packed in a new spirally wound, glued shell, which increases moisture resistance. It is provided in all normal sizes for coal blasting.

Remarkable Saving Made With Coal in Lumber Operations

WE ARE INDEBTED to James B. Smith, President, Spring Canyon Coal Company, with operations in Utah, for an interesting article on the conversion of lumbering power units from oil to stoker-fired coal, by the St. Paul and Tacoma Lumber Company, Tacoma, Wash. The units converted were a logging locomotive, skidders, and high lead units. Based on actual operating costs for converted units, the company will save \$12,000 power cost annually. Significant, aside from the saving, is the statement by the company that "the machines in operation show a marked improvement in steaming with mechanically fired coal over oil, which means more logs per day and reduced costs per thousand feet. An appreciable saving is furthermore realized in the reduced costs of repairs and upkeep on the coal rigs. Much greater efficiency is also possible, thereby maintaining equipment and crew at full load."

The Hadsel Mill

AN IMPORTANT DEVELOPMENT in rock-crushing practice has recently been announced by the Hardinge Company, York, Pa. The Hadsel mill consists of a large bucket wheel varying in diameter from 20 to 36 feet which revolves in a shallow tank. Coarse ore is fed into the wheel, and water continuously flows in and out of the tank. Inside of the wheel, near its bottom but above the water level, are a series of flat stationary anvil plates set at a slight angle. The buckets are designed so as to lift the ore to be crushed to the maximum height of the wheel before its drops out and down on the anvil plates.

In operation, ore from the bin is fed directly into the wheel by the feeder, drops on the anvil plates, then falls into the buckets as they pass through the water below the plates. The ore is lifted by the buckets to near the maximum height of travel before it begins to drop out, as the slope of the buckets changes with the rotation of the wheel. A thin layer of smaller particles of falling ore remains on the anvil plates, and is pulverized still further by the showering mass of material from above before it is pushed off.

The product from the anvil plates drops into the water and back into the buckets of the wheel. The finer particles, however, remain in suspension, and flow out the side of the wheel as a pulp. This pulp then flows to the back of the wheel, up through the opening between the side and the adjustable

baffle, and is so discharged. The movement of the wheel causes a circulating motion in the tank which keeps the pulp alive.

Ores dropped from different heights are reduced in size at varying rates, but above a certain critical height the grinding action becomes very rapid; hence the reason for large diameter wheels for all sizes of Hadsel mills.

Run-of-mine ore containing the usual amount of boulders can be fed to the mill just as readily as fines, it is said. Ordinarily, a single drop will not break a large lump into many pieces, any more than a large piece of ore could be broken with a single stroke of a hammer, but it will cause corners to be broken off, and after a few drops, it is so much reduced in size as to be unrecognizable in the general mass.—*Mining and Metallurgy*, November, 1932.

New Rubber Belting

RUBBER BELTING, which resists chemicals and oils, the first product of its kind perfected in the rubber industry, is announced by The B. F. Goodrich Company, Akron, Ohio.

For years experiments were conducted to discover a process to protect rubber belts from the destructive action of acids, alkalies and oils before the Goodrich method was developed in the Goodrich laboratories. The new belting has given satisfactory service after complete immersion in oil for several days, while ordinary belting will last only one-third as long when subjected to similar exposure, according to Goodrich engineers.

B. S. Taylor, manager of Material development for the Goodrich processing division, is the inventor of the new belting which will shortly be marketed by the Akron company.

300 Uses For Stainless Steels

UNDoubtedly the best known and most widely used of the alloy steels are the comparatively large group of chromium and chromium-nickel steels generally called stainless steels. These steels contain from 12 to 20 per cent chromium, with or without additional alloying elements. Of these, the 18 per cent chromium, 8 per cent nickel steel is probably the most widely used at the present time.

Stainless steels are particularly well adapted for use in resisting atmospheric corrosion, attack from oxidizing agents, and scaling at elevated temperatures. Because of their good physical properties and broad range corrosion resistance, they are continually finding new uses in place of ordinary steel and cast iron. Everything from tanks to thermometer parts is being fabricated from this group of alloy steels.

Hold-Back for Belt Conveyors

A HOLD-BACK for belt conveyors is announced by Mavor and Coulson, Ltd., of Glasgow, Scotland, in the December 9 issue of *The Colliery Guardian*.

This hold-back is fitted on the second reduction shaft of the M. and C. driving gear designed for use with up-hill non-reversing conveyors. Four steel rollers in wedge-shaped recesses allow the shaft to run in only one direction, and hold the conveyor against gravity the moment it ceases to run forward. The rollers are kept from chattering by spring-loaded pins, and all jar and risk of breakage—inevitable with the ratchet type of hold-back—are therefore eliminated. The hold-back makes no addition to the size of the gear. When the gear is running, the rollers run noiselessly on the inside of the race, and there is no wear.

Low idler friction is an enormous asset in a belt conveyor, because not only is less power consumed but a smaller motor

(Continued on page 30)

LEGISLATION

(Continued from page 19)

Since direct state relief for unemployment is barred by constitutional limitations in Colorado, Governor Edwin C. Johnson said in his inaugural address to the Legislature, the solution resolves itself into that of a general sales tax, the income to be applied to creating a constructive work program for the unemployed.

Ohio

PROPOSED AMENDMENTS to the Ohio Constitution which, if adopted, would entirely eliminate one branch of the State Legislature and change the whole system of election and tenure of office of state and county officers were submitted to the Attorney General, John W. Bricker, by Charles H. Hubbell, of Cleveland.

Washington

THE ADOPTION by the people of Washington of an initiative law limiting all tax levies, other than for interest and bond redemption, to 40 mills constitutes "notice that drastic curtailment in activities carried on at public expense must be enforced," it was asserted by Governor Hartley in his final message to the Legislature. Unemployment relief, Governor Hartley declared, is properly a function of local government, and to transfer this obligation from the county to the state "opens the door to unlimited opportunities for waste, inefficiency and graft."

New Mexico

AN EIGHT-POINT TAXATION program was recommended by Governor Seligman of New Mexico in his message to the Legislature. He proposed the abolition of appraisal boards, a basic survey by metes and bounds of all property in each county, a law providing for classification of property every four years, abolition of delinquent tax collectors, revision of the delinquent tax law, reduction of penalties for delinquency, a graduated income tax, and amendment of the ex-service men's \$2,000 property exemption law.

California

CALIFORNIA STATE LEGISLATURE has before it 20 bills looking to changes in tax laws.

Minnesota

THE STATE LEGISLATURE of Minnesota has before it 13 bills on taxation, in the main providing for extension of time in payment of real estate tax.

EIGHT BILLS are before state legislatures seeking changes in workmen's compensation laws, notably California and New York.

Legislation For Capital Structure Changes

LEGISLATION that would permit corporations to avoid at a joint meeting of the subcommittees of the Senate and House Judiciary Committees on December 12. The measure under consideration, based on Senate Bills 4921 and 4923, both by Hastings, and House Bills 12753 (McKeown) provides that any corporation may file a petition with the Federal court in the district in which it does business stating that the corporation is insolvent and desires to reorganize. It may then present plans for such reorganization and may include in such plans proposals to alter the rights of creditors, including bondholders, and also of its stockholders. Such reorganization plans may then become effective upon approval by two-thirds of the creditors in each class affected and by the Federal judge.

Cost of Government

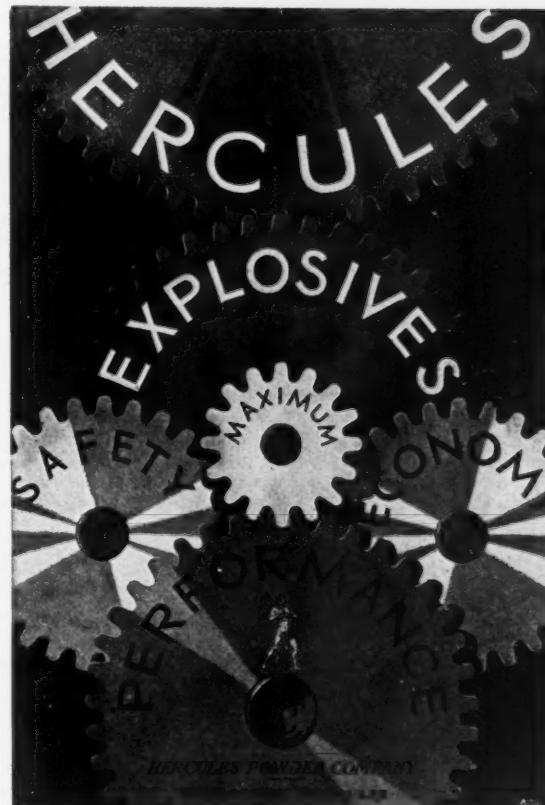
THE TOTAL per capita tax burden in the United States was \$77.53 in 1931, as compared with \$68.27 in 1922, according to Representative Vinson (Dem.), of Ashland, Ky., who is chairman of a special House committee investigating double taxation. The nation's taxes—Federal, state, county, and local—totaled \$9,519,000,000 for 1931, not including customs. The final report of the committee will be available within two weeks. The report shows that there has been a decrease in Federal tax burden since 1922 which has been

offset by increase in local taxes. Cities show an increase of 63 percent in per capita taxes in 1931, as compared with 1922. The report shows that the total for city taxes exceeds that of Federal taxes. The division for 1931 was as follows: Federal taxes, \$2,428,000,000; state taxes, \$1,967,000,000; county taxes, \$958,000,000; city taxes, \$2,978,000,000; other local taxes, \$1,188,000,000; total, \$9,519,000,000. There appears to be 326 cases of double taxation, or duplicate taxation.

Tariff Policies

RECORDS AND FILES of all Government agencies would be drawn upon for information "indicating the present possibilities of a tariff-bargaining policy," under the terms of a resolution offered in the Senate, January 13, and referred to its committee on finance. The resolution was offered by Senator Costigan (Dem.) of Colorado, who said in connection with its presentation that the present Congress should take steps to provide the incoming President, Congress and the public with all available data on the subject.

He said "it was assumed" the incoming President would include in his legislative program "reasonable efforts" to promote advantageous and expanded trade between the United States and foreign countries.



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BOOK REVIEW

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gardie, Klondike, Nome, West Africa, Kolar, Cobalt, and Porcupine.

In his four-page epilogue, Rickard says in part:

Civilization was developed on a metallic basis, not as regards money, for credit, rather than coin, is the expression of an advanced stage of society, but as regards implements and instruments, machinery and transport, facility of communication and comfort and living, all of which require the skilful application of metals. . . . In the great work of opening the dark places of the earth and of introducing civilization among the backward peoples, the miner has been the prime agent. . . . Trade follows the flag, but the flag follows the pick.

COMMODITY PRICES AND SILVER

(Continued from page 12)

It would be absolutely unnecessary to attempt to fix the price. I am opposed to all price-fixing schemes. I know of no case in which they have worked. I only seek to restore the law of supply and demand. Once stabilize the supply to the normal mine supply and the normal use and the exchange value of silver money would be substantially stabilized. Certainly the fluctuation in the exchange value of such silver money would not be sufficient to interfere with credit transactions based upon the future value of silver money.

Link-Belt Distributor

MOORE-HANDLEY HARDWARE CO., 25 South 20th St., Birmingham, Ala., have been appointed distributors and direct representatives for the entire Link-Belt general line of elevating, conveying and power transmitting machinery in Birmingham territory. In this capacity they will be prepared to give engineering assistance in the solution of conveying and power transmitting problems. They will also carry a suitable stock of Link-Belt Chains, Conveyors, Gears, Sprockets, Transmission Machinery.

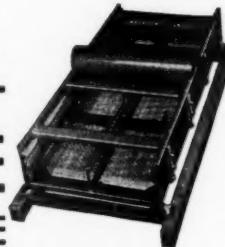
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MODERN MINING EQUIPMENT

(Continued from page 28)

can drive a longer conveyor. Less grip is needed at the driving drum, therefore less tension is needed on the belt, and less wear is caused on the surface of the belt. All these factors allow a lighter belt to be used, which, besides decreasing the first cost and increasing the belt life, also decreases the cost of replacing the belt. Alternatively, a belt of the same strength may be used on a much longer conveyor; M. and C. Conveyors have been supplied with as great a length as 2,000 feet on a single driving gear. An M. and C. belt conveyor with a gradient of 1 in 18 in favor has been extended to 643 yards long while driven by a 10 h. p. motor.

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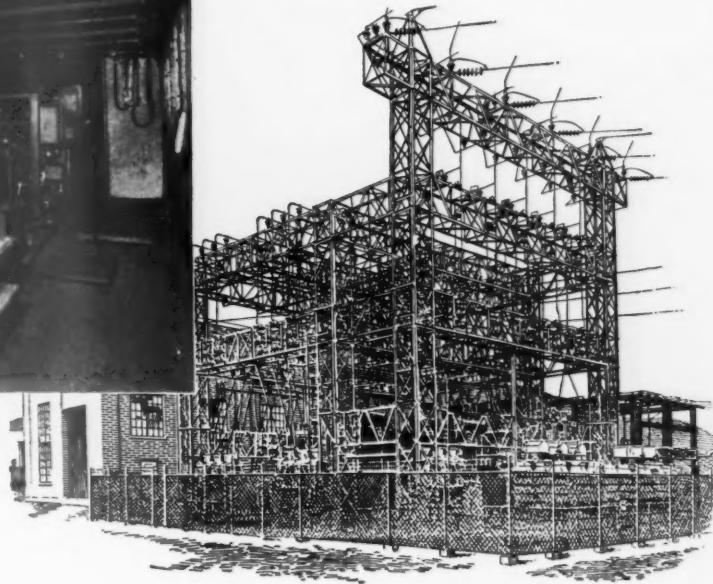
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One of two G-E 300-kw. portable substations at Wildwood Mine of Butler Consolidated Coal Company



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